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ABSTRACT

This is the teacher's manual to accompany part 1 of the workbook for grade 5 pupils in the Comprehensive Instructional Management System, a teacher-designed unified mathematics curriculum for kindergarten through grade 7. It is composed of a curriculum, a testing component, and a computer-managed reporting system. The curriculum is organized into modules of similar skills or understandings from 14 topics. Each module has: a suggested period of duration for student mastery; a listing of new skills to be mastered by the student in the form of performance objectives; a section devoted to vocabulary, terms, and symbols; getting-started activities on prerequisite skills in preparation for undertaking new objectives; strategies for teaching the new skills; and student activities for providing reinforcement for the newly learned objective. After the sequence of modules and content by topic are displayed, teaching suggestions for 67 modules on 69 performance objectives are given. The content areas are: numbers and numeration; addition; subtraction; fractions; geometry; measurement; algebraic concepts; graphs, probability, and statistics; and problem solving, plus review. Pages from the student's workbook are interspersed M. (MNS)

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EXPERIMENTAL

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# CIMS

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# COMPREHENSIVE INSTRUCTIONAL MANAGEMENT SYSTEM

# A Cyclical Mathematics Curriculum

## PART 1—TEACHER

SE 045 525

NEW YORK CITY BOARD OF EDUCATION
OFFICE OF CURRICULUM DEVELOPMENT AND SUPPORT
DIVISION OF CURRICULUM & INSTRUCTION

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See catalogue for price.

## FOREWORD

The Comprehensive Instructional Management System (CIMS) is a unified mathematics curriculum for grades K-7. The curriculum is cyclical in design, and reflects the most recent New York City and New York State guidelines.

Utilizing the experience of our system's teachers, we have developed a teacher-designed curriculum that includes a rich selection of classroom-tested successful mathematics activities. The major goal of the CIMS mathematics project is to provide the classroom teacher with a well-structured, objective-based curriculum. All objectives are supported by a variety of strategies. Student mastery of these objectives is readily diagnosed through the system's testing component.

The curriculum format is structured to allow the teacher to determine the ability level of the students in the topic under study, and to permit the students to move forward at their individual rates. Each module of instruction provides the teacher with a set of related performance objectives. These objectives are supported by activities which probe and develop the students' readiness to undertake new skills and concepts. Further reinforcement is given to mastery of the objectives through accompanying student workbooks.

It is hoped that this curriculum will not only assist teachers in developing vital mathematics instruction, but will serve to expand and enrich students' mathematics skills.

Charlotte Frank

Charlotte Frank,
Executive Director
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## ACKNOWLEDGMENTS

The Comprehensive Instructional Management System (CIMS) was developed as a project of the Division of Curriculum and Instruction, Charlotte Frank, Executive Director. Dr. Peter Negroni, Community School Superintendent CSD 12; Dr. Harvey Garner, Community School Superintendent CSD 18; Carlos Edwards, Community School Superintendent CSD 23, and Joseph Pacheco, Community School Superintendent CSD 32 supervised the overall development of the CIMS program within their respective districts.

Morris Freedman, Director of the Office of Curriculum Development and Support; Irwin Kaufman, Director of Mathematics; Kenneth Bates, Director of CIMS; Maria DeSalvio, Assistant Director of Mathematics; Arthur Flug and Doreen Genkin, Assistant Directors of CIMS and Gene Menchini, Program Manager, Distributive Systems, Office of Data Processing Coordination provided overall supervision of this project.

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## INTRODUCTION

The Comprehensive Instructional Management System (CIMS) is a teacher-designed educational delivery system composed of a curriculum, a testing component and a computer managed reporting system.

Designed to support mathematics instruction in the classroom, CIMS provides a comprehensive cyclical mathematics curriculum for grades K through 7. Each manual describes the curriculum for a single level or grade. Teacher curriculum developers from elementary, intermediate and senior high schools utilized the most current New York City and New York State guidelines in formulating the curriculum's modules and sequence.

### Curriculum Topics

The CIMS mathematics curriculum has been organized into the following 14 topics:

.01 Numbers and Numeration
.02 Addition of Whole Numbers
.03 Subtraction of Whole Numbers
.04 Multiplication of Whole Numbers
.05 Division of Whole numbers
.06 Fractions
.07 Decimals
.08 Integers
.09 Geometry
.10 Measurement
.11 Algebraic Concepts
.12 Graphs, Probability, Statistics
.13 Problem Solving
.14 Review

### Modules of Instruction

The CIMS curriculum is organized into modules or groupings of similar skills or understandings. Each module has a suggested period of duration for student mastery, a listing of new skills to be mastered by the student in the form of performance objectives, a section devoted to vocabulary, terms and symbols, getting started activities which serve as prerequisite skills in preparation for undertaking new objectives, strategies for teaching the new skills and student activities for providing reinforcement for the newly learned objective. Note that

the lesson duration is included only as a guideline to the teacher for planning purposes. The actual time required for each module will vary from class to class and from child to child depending on the needs of the students and the teacher's judgment.

**Priorities of Performance Objectives**

There is an order of priority to be recognized in teaching the content presented in the CIMS NEW YORK CITY MATHEMATICS CURRICULUM. Performance objectives with the greatest priority are so basic that unless the student acquires a satisfactory degree of competency in them, the student cannot progress. Such topics are marked A and mastery by all pupils is essential.

Performance objectives marked B are required to be presented to all students. Mastery is not expected at this time. These objectives will be developed further and reinforced later.

Performance objectives marked C are of special interest. These should be taught to increase positive attitudes towards mathematics.

Summary: A - Mastery of this objective is essential for progress. Opportunities for reinforcement should be provided throughout the school year.

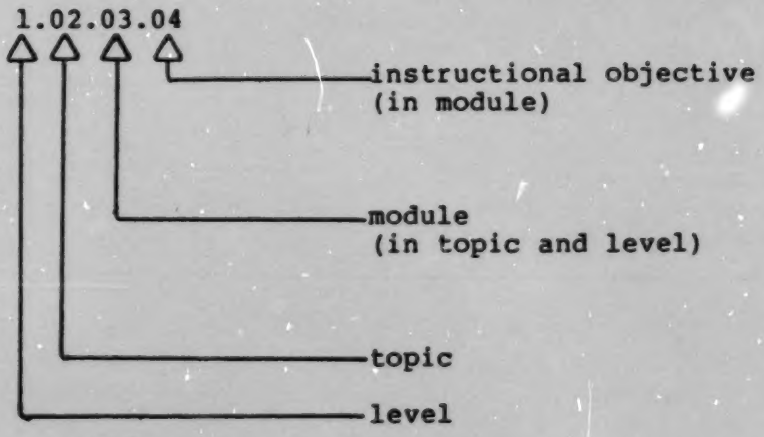
B - These objectives are to be taught to all pupils. Mastery is not essential at this time because the topics will be further developed and reinforced.

C - Objectives of special interest.

## Topic Tab Key

01. Numbers and Numeration
02. Addition of Whole Numbers
03. Subtraction of Whole Numbers
04. Multiplication of Whole Numbers
05. Division of Whole Numbers
06. Fractions
07. Decimals
08. Integers
09. Geometry
10. Measurement
11. Algebraic Concepts
12. Graphs, Probability, Statistics
13. Problem Solving
14. Review

## Module Coding Key



## INSTRUCTIONAL SEQUENCE DESCRIPTION

An instructional sequence is given in list form on the following pages for this level. The sequence has been arranged to reflect what is considered the most effective presentation of the mathematics curriculum. Each module in the list is described by its unit number, module number, title, and page location.

The CIMS tests are integrated within the manual sequence. The test number is located in the first column. Each test is designed to assess priority objectives from the preceding modules. The tests are used to determine student mastery of specific performance objectives within these modules and appear in a multiple choice format. Each performance objective code number preceded by an * indicates that the performance objective is not tested on a CIMS test.

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INSTRUCTIONAL SEQUENCE - LEVEL 5


| TEST NUMBER | UNIT NUMBER | MODULE NUMBER | TITLE | PAGE NUMBER |
|---|---|---|---|---|
| | 1 | 5.09.01 | Planes | 1 |
| | 2 | 5.14.01 | Place value | 2 |
| | 3 | 5.01.01 | Place value through hundred thousands | 3 |
| 5.01 | 4 | 5.01.02 | Round 6-digit numbers | 4 |
| | 5 | 5.14.02 | Addition | 5 |
| | 6 | 5.02.01 | Addition of two addends through 6-digit numbers | 6 |
| | 7 | 5.14.03 | Subtraction | 7 |
| | 8 | 5.03.01 | Subtraction through 6-digit numbers | 8 |
| 5.02 | 9 | 5.13.01 | Sets | 9 |
| | 10 | 5.14.04 | Fractions | 10 |
| | 11 | 5.06.01 | Equivalent fractions | 12 |
| | 12 | 5.06.02 | Greatest common factor (GCF) least common multiple (LCM) | 14 |
| | 13 | 5.10.01 | Measurement - linear - $\frac{1}{16}$" | 15 |
| 5.03 | 14 | 5.10.02 | Linear measurement - metric | 16 |
| | 15 | 5.07.01 | Decimals - thousandths | 17 |
| | 16 | 5.07.02 | Addition and subtraction of decimals through thousandths | 18 |
| | 17 | 5.14.05 | Multiplication | 19 |
| | 18 | 5.04.01 | Multiplication of multiples of ten by multiples of ten | 20 |
| | 19 | 5.04.02 | Multiplication of two 2-digit numbers | 21 |
| 5.04 | 20 | 5.04.03 | Multiplication of a 3-digit number by a 2-digit number | 23 |
| | 21 | 5.14.06 | Division | 25 |
| | 22 | 5.05.01 | Division of 5- and 6-digit dividends by 1-digit divisors | 26 |

## REVISED
## INSTRUCTIONAL SEQUENCE - LEVEL 5


| TEST NUMBER | UNIT NUMBER | MODULE NUMBER | TITLE | PAGE NUMBER |
|---|---|---|---|---|
| | 23 | 5.09.02 | Angles | 28 |
| | 24 | 5.09.03 | Angle measurement | 29 |
| | 25 | 5.10.03 | Perimeter | 30 |
| 5.05 | 26 | 5.13.02 | Use past knowledge to solve problems | 31 |
| | 27 | 5.06.03 | Multiplication of fractions | 32 |
| | 28 | 5.06.04 | Multiplication of mixed numbers | 33 |
| | 29 | 5.12.01 | Graphs | 34 |
| | 30 | 5.12.02 | Statistics - mean and median | 35 |
| 5.06 | 31 | 5.01.03 | Roman numerals to M | 36 |
| | 32 | 5.04.04 | Multiplication of 4-digit numbers by 2-digit numbers | 37 |
| | 33 | 5.10.04 | Area of a rectangular region | 38 |
| | 34 | 5.05.02 | Division of 5- and 6-digit dividends by 2-digit divisors | 39 |
| | 35 | 5.13.03 | Problem solving - missing information | 40 |
| | 36 | 5.09.04 | Circles | 41 |
| 5.07 | 37 | 5.12.03 | Circle graphs | 42 |
| | 38 | 5.09.05 | Congruent and similar figures | 43 |
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| | 41 | 5.08.01 | Positive and negative numbers | 46 |
| | 42 | 5.13.04 | Problem solving - lists and tables | 47 |
| | 43 | 5.01.04 | Prime numbers | 48 |
| | 44 | 5.05.03 | Division by multiples of 100 | 49 |
| | 45 | 5.05.04 | Division by 3-digit divisors | 50 |

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## INSTRUCTIONAL SEQUENCE FOR LEVEL 5


| TEST NUMBER | UNIT NUMBER | MODULE NUMBER | TITLE | PAGE NUMBER |
|---|---|---|---|---|
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5.04.03 Multiplication of a 3-digit number by a 2-digit number..... 23
5.04.04 Multiplication of 4-digit numbers by 2-digit numbers..... 37
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**CONTENT BY TOPIC**

**LEVEL 5**


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5.06.02 Greatest common factor (GCF) least common multiple (LCM)..... 14
5.06.03 Multiplication of fractions..... 32
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**CONTENT BY TOPIC**

**LEVEL 5**


| | | | |
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| | 5.10.05 | Scale drawings..... | 55 |
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| | 5.13.05 | Problem solving - guess and check..... | 65 |
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| | 5.14.02 | Addition..... | 5 |
| | 5.14.03 | Subtraction..... | 7 |
| | 5.14.04 | Fractions..... | 10 |
| | 5.14.05 | Multiplication..... | 19 |
| | 5.14.06 | Division..... | 25 |

## 5.09.01 PLANES

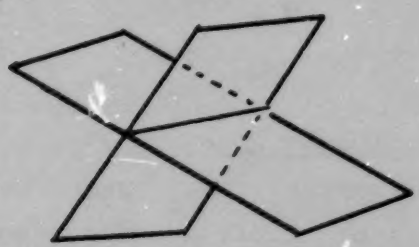
(2 lessons)

**PERFORMANCE OBJECTIVES**

The student will be able to...

5.09.01.01B identify a plane as a flat surface which extends endlessly in all directions; it has the property that the line joining any two points of the plane lies entirely in the plane;
e.g.,

5.09.01.02B identify intersecting planes;
e.g.,



5.09.01.03B identify the intersections of planes and space figures.
e.g.,

5.09.01

**VOCABULARY**

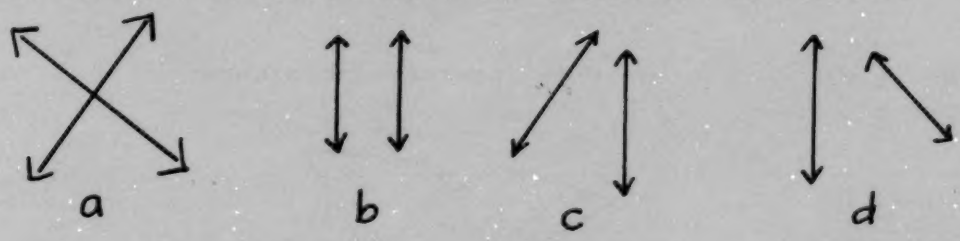
| **TERMS** | **SYMBOLS** |
|---|---|
| point | . |
| line | —> |
| plane | |

**GETTING STARTED**

Draw a dot on the chalkboard and say, "What does this represent?" (a point) Draw several more dots, not touching, but all in a straight path. Ask, "What will be formed if I continue to draw many more points until they are all touching one another?" (a line segment) If I continue the line segment indefinitely in both directions what will we get?" (a line) Continue this procedure, showing several examples of lines and line segments.

---

Draw several sets of lines on the chalkboard as follows.




Say, "We have learned about two possibilities for lines: parallel lines and intersecting lines. Which set of lines seems to be parallel?" (set b) Elicit a definition and some examples of parallel lines. Say, "Which set or sets are intersecting lines?" (sets a, c and d) Elicit that intersecting lines either cross or will eventually cross. Discuss examples of intersecting lines.

5.09.01

5.09.01.01 **identify a plane as a flat surface which extends endlessly in all directions; it has the property that the line joining any two points of the plane lies entirely in the plane**

**STRATEGY 1:** Prepare a large piece of string about two feet long and a large ball, e.g., a basketball or beachball. Draw two dots (points) on the chalkboard about two feet apart. Say, "Is it possible for me to connect these two points with a line?" (Yes) Demonstrate by stretching the string between the two points. Hold up the ball and mark two points on it. Say, "Is it possible to connect these two points with a line segment?" Elicit from the students that it is not possible if you don't go through the inside of the ball. Say, "It was possible to connect the two points on the chalkboard but not on the ball because the chalkboard is a flat surface, and the ball has no flat surface." Identify a plane as a flat surface which we describe as extending endlessly in all directions. Elicit from the students examples of planes, e.g., piece of paper, surface of desk, floor.

**STRATEGY 2:** Prepare a selection of space figure models. Place the space figures, e.g., cube, rectangular prism, square pyramid, cone, cylinder, sphere, into a carton or large paper bag. Say, "I'm going to begin removing the space figures one at a time, and as I do, I'd like you to decide which ones belong together. We'll make as many piles as necessary as we sort them." Begin removing space figures one at a time and elicit from the students which ones they feel belong together. When all the figures have been removed from the carton, ask a student to

5.09.01

**STRATEGY 2:** cont'd justify the method of sorting. Elicit that there are several correct or reasonable possibilities, e.g., prism vs. pyramids, sorting by number of faces, and sorting by size. If no one has suggested it, arrange the space figures so that all those made up only of plane figures are in one group, and all those having at least one curved surface (cone, cylinder, sphere) are in the other group. Elicit from the students the justification for sorting this way, and discuss the difference between plane and curved surfaces.

**5.09.01.02 identify intersecting planes**

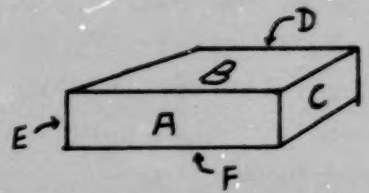
**STRATEGY 1:** Say, "Look around the classroom. How many models of planes do you see?" Have the students name various models of planes, e.g., walls, floor, ceiling, desk tops, shelves, bookcases. Say, "We know that intersecting lines either cross or eventually cross one another. Can someone give the class a definition of intersecting planes?" Elicit from the students that intersecting planes either cross or will eventually cross one another. Have the students name several sets of intersecting planes.

Say, "How do we describe two lines which will never cross?" Elicit that they are parallel. Say, How would we describe two planes that will never cross?" Elicit that they are parallel. Ask the students to name several sets of parallel planes, e.g., floor and ceiling, front and back wall, desk top and floor. Continue to reinforce the idea that these are only models, that the planes extend

5.09.01

**STRATEGY 1:** indefinitely in all directions.
cont'd

**STRATEGY 2:** Prepare a carton or large box with all six faces intact. Mark each face with a large letter, A through F.
e.g.,




Say, "How many plane surfaces are there on this carton? (6) Can someone name them? (A,B,C,D,E,F) If we were to extend all of the planes one foot in each direction, some of them would cut through each other. For example, plane A would cut through plane B. Which other planes would A cut through? (C,E,F) Just as we call lines that cut through each other intersecting, we call planes that cut through each other intersecting. Which plane will never cut through A, regardless of how far we extend it? (D) What do we call lines that never cut through each other? (parallel lines) What do you think we call planes that never cut through each other?" (parallel planes) Ask the students to list other sets of intersecting and parallel planes from the model.

**5.09.01.03 identify intersections of planes and space figures**

**STRATEGY 1:** Prepare some models of space figures which can be cut with a knife, e.g., cylindrical oatmeal box, standard cereal box, orange, and several sheets of oaktag or cardboard. Say, "We can create some interesting shapes by slicing these space figures

**STRATEGY 1:** cont'd

and these models of planes." Hold the cylinder up along with one piece of oaktag. Begin moving them towards one another, holding the oaktag parallel to the base of the cylinder. Say, "If I slice through the cylinder with this plane, what will be the shape of the cut?" (a circle) With the knife, carefully slice through the cylinder near the top and parallel to it. Show the cylinder to the students. Elicit that the cut is, in fact, in the shape of a circle.

Repeat the above procedure, using the following cuts:

A plane cutting a cylinder at an angle will result in a cut (intersection) which is an elipse.

A plane cutting a rectangular prism (standard cereal box) at any angle results in an intersection which is a rectangle.

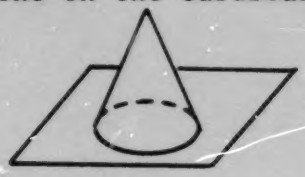
A plane cutting a sphere at any angle results in an intersection which is a circle.

**STRATEGY 2:** Prepare a set of space figure models, either plastic or wood, and a square of cardboard representing a plane. Hold up the model of the cone and the plane and say, "We can make some interesting discoveries about what happens when planes intersect with space figures." Rest the cardboard atop the cone as follows.

**STRATEGY 2:** cont'd

Say, "What part of the cone is the plane touching? (the point) We can say that when a plane intersects a cone in this way, the intersection forms a point."

Rest the cone on the cardboard as follows.



Say, "What part of the cone is the plane touching now? (the base, the 'circle,' the 'bottom') When a plane intersects a cone this way, we say the intersection forms a circle."

Lay the cardboard along the cone as follows.

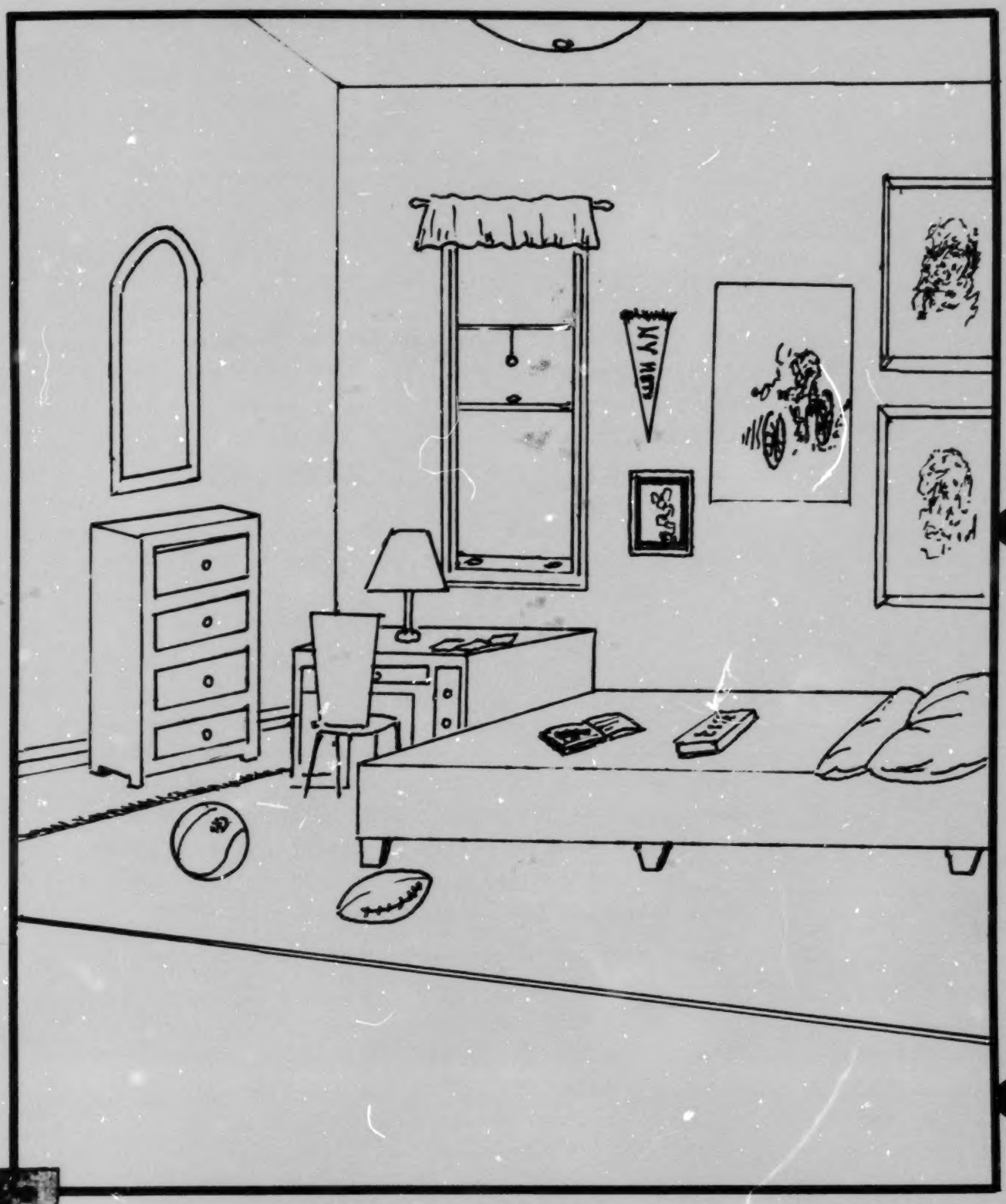
Say, "What part of the cone is the plane touching now? (the side) Is it touching the entire side? (no) Why not? (the side is curved) The plane is only touching one point along the entire side of the cone. What do points in a straight path form? (a line) We can say that when a plane intersects a cone this way, the intersection is a line."

Repeat this procedure with other space figures.

P.O. 5.09.01.01

NAME:_____ CLASS:_____ DATE:_____

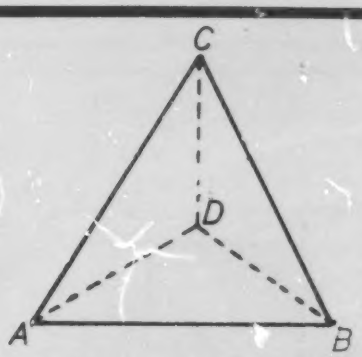
Directions: Select objects from the room which could be used as models for planes.



P.O. 5.09.01.02

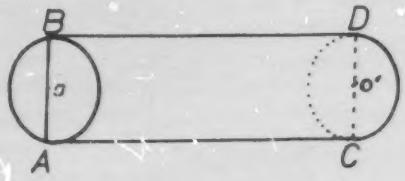
NAME:_____ CLASS:_____ DATE:_____

Directions: In each figure name two sets of intersecting planes. If there are no sets of intersecting planes, write none beneath the picture.

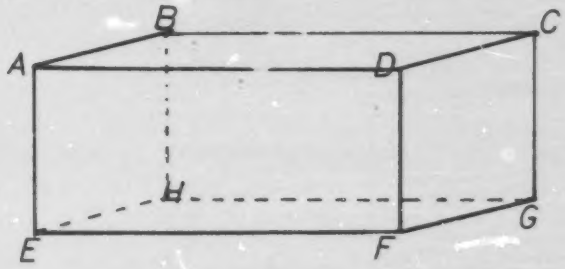



Intersecting planes are:

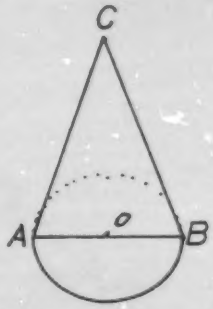
ABC & ABD
ABC & ACD
ABC & BCD
ACD & BCD
ACD & ABD
BCD & ABD



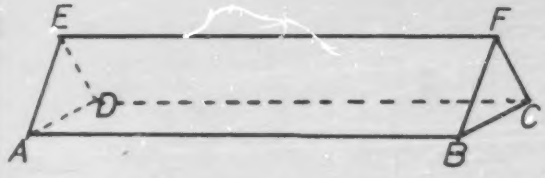

Intersecting planes are:



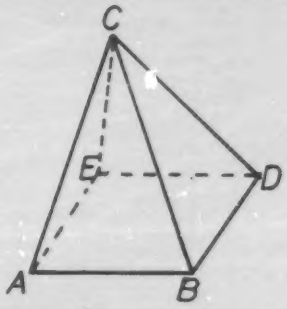

Intersecting planes are:




Intersecting planes are:




Intersecting planes are:

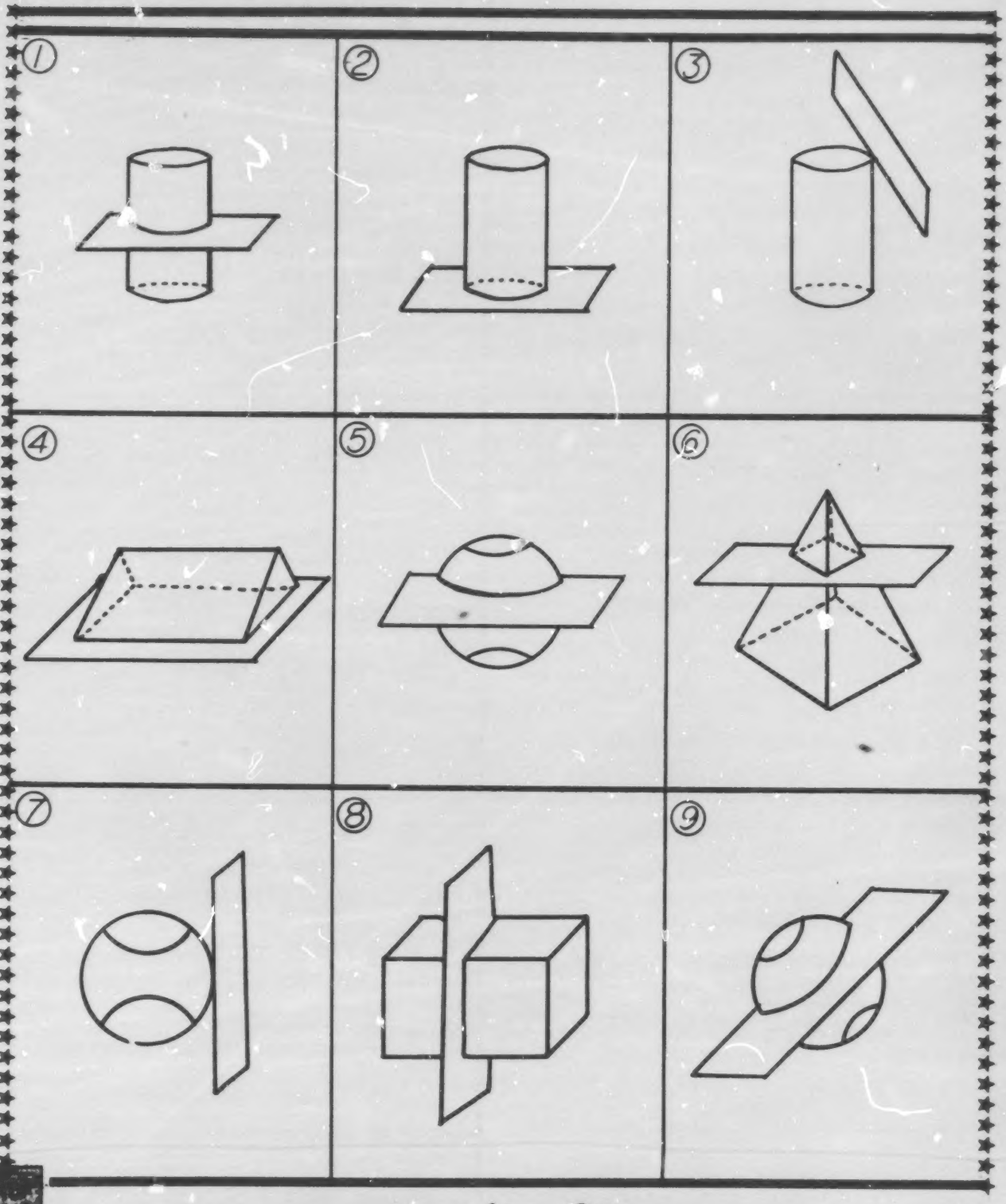



Intersecting planes are:

P.O. 5.09.01.03

NAME: _____ CLASS: _____ DATE: _____

Directions: Circle each picture, showing the intersection between the space figure and the plane



## 5.14.01 PLACE VALUE

(ongoing)

**PERFORMANCE OBJECTIVES**

The student will be able to...

5.14.01.01 identify and write the place value of numbers through 9999;
e.g.,

1 2 3 4
2 hundreds

5.14.01.02 identify and write a 4-digit number in expanded notation;
e.g.,

3562 = 3000 + 500 + 60 + 2

5.14.01.03 identify and write the number given the expanded form of 4-digit numbers through 1000.
e.g.,

1000 + 800 + 70 + 5 = 1875

5.14.01

**VOCABULARY**

**TERMS**

standard number
expanded number

---

**GETTING STARTED**

Prepare a set of squared material for each student. Draw a place value chart on the chalkboard e.g. Hundreds Tens Ones. Write 362 on the chart. Say, "Make the representation for this number with your squared material." Ask a student to demonstrate at the front of the room by taping the pieces to the chalkboard. Say, "Why did you use three hundreds?" Elicit that we usually write digits in certain places because the place in which we write the digit represents its value.

---

Draw a place value chart on the chalkboard and prepare a set of cards numbered from 0 through 9.

Select a student to choose three cards. Say, "What number can you make using these cards?" Ask the student to write the number on the place value chart. Say, "The way we placed these cards tells us the value of each digit." e.g., Using the cards 3,5,6 the student could make the number 356. The value of this number would be 356. Had they placed the 6 first the number might be 653.

Continue this procedure, asking the students to identify the value of each digit.

5.14.01

5.14.01.01 **identify and write the place value of numbers through 9 X 9999**

**STRATEGY 1:** Prepare a set of cards numbered 0 - 9. Draw a place value chart through thousands on the chalkboard. Select a student to choose four cards, e.g., [8][6][4][2]. Say, "What number could be written using these cards? There are many combinations, but if I place each digit in a different place in our chart I give each digit a value." Write on the chalkboard.

| Th | H | T | O |
|---|---|---|---|
| 8 | 6 | 4 | 2 |

Say, "What number do we have now? (8642). By placing a digit in a particular place we give the digit a value."

Ask a student to use the same cards and make the smallest number possible, e.g., 2468. Say, "The placement of each digit tells us the value of the digit."

**STRATEGY 2:** Draw a place value chart through thousands on the chalkboard and number a blank cube 0 - 6. Ask a student to come up and roll the cube and call out the number facing him/her, e.g., 6.

Write 6 in the thousands place. Continue this procedure until the chart contains four digits, e.g., 6, 0, 2, 1. Say, "What number did we make? (6021) How many thousands? (6) Hundreds? (0) Tens? (2) Ones? (1). The placement of each digit in a certain place determines its value." Continue this procedure.

5.14.01

5.14.01.02 **identify and write a 4-digit number in expanded notation**

**STRATEGY 1:** Prepare base ten material for each student and one set for demonstration. Write 1345 on the chalkboard. Say, "We are going to show the value of each digit using our material. Place one thousand cube on your desk. What is the value of this cube?" (1000) Ask a student to write the number on the chalkboard. Say, "Place 3 hundred squares next to the thousand cube." Ask a student to come to the front of the room and write the value of the three squares (300) next to the 1000. Say, "Place 4 ten strips and 5 unit pieces on your desk." Ask a student to write the value of the tens and the units, e.g., 1000 300 40 5. Say, "We have 1000 and (write a plus sign as you say and) three hundreds and forty and five in squared material (1000 + 300 + 40 + 5)." Point to the expanded number written on the chalkboard and say, "We have shown the value of each digit in the number we started with. When we express a standard number this way we have written it as an expanded number."

**STRATEGY 2:** Prepare a card for each student, and on each card write a different 4-digit number. Distribute the cards and select a student to read his/her number, e.g., 3285. Say, "How many thousands are in your number?" (3) "How can we write this as a numeral?" Ask a student to come to the chalkboard and write 3000. Say, "What does the 2 stand for?" (200) Ask a student to write 200. Continue for the remaining digits.

5.14.01

**STRATEGY 2:** cont'd

At the chalkboard place a plus sign between each number, e.g., 1000 + 300 + 80 + 15. Say, "We have shown that the number 3285 means 3000 + 200 + 80 + + 5."

Ask the students to use their cards and write their expanded numbers. The students can exchange cards and then check to see that they all have written their expanded number. Ask several students to come to the chalkboard to write their original and expanded numbers.

**5.14.01.03 identify and write the number given the expanded form of 4-digit numbers through 1000**

**STRATEGY 1:** Prepare a 4x4 grid for each student, scissors and paste. Distribute the materials to each student. Say, "Write 4000 on the first line 4 0 0 0 , 300 on the second line 3 0 0 , 20 on the third line 20, and 6 in the fourth line 6. Cut the grid into four strips and cut off any boxes without a digit. Which strip is the longest? (4000) Place it flat on your desk. Which strip is next? (300) Put the 300 on top of the 4000 so that the 4 still shows, and paste it down. What number do we have now?" (4300) Continue this procedure until the number 4326 is made. Say, "What number do we have now? We went from the expanded form of this number to the standard form. We added 4000 + 300 + 20 + 6."

**STRATEGY 2:** Prepare squared material or multi-base blocks. Show 3000 + 900 + 80 + 2 using the material. Ask a student to count the pieces while you write the

**STRATEGY 2:** cont'd

expanded number on the chalkboard. Draw a place value chart through thousands next to the expanded number. Ask a student to rewrite this number in the place value chart. e.g., 3982.

| TH | H | T | O |
|---|---|---|---|
| 3 | 9 | 8 | 2 |

Say, "Can you write his number in standard form?" (3982) Ask a student to write the number. Say, "We really had an addition example because our standard number is the sum of the thousands, hundreds, tens, and ones." Continue this procedure.

P.O. 5.14.01.01

NAME:_____ CLASS:_____ DATE:_____

Directions: I What does the circled digit stand for? Write your answer two ways.
II Write the standard numeral.

| TH | H | T | O | |
|---|---|---|---|---|
| 5 | 1 | (4) | 0 | 5140 |

| | |
|---|---|
| A. 5 1 (4) 0 — 4 tens / 40 | F. 4 2 (9) 6 — _____ / _____ |
| B. (1) 0 1 0 — _____ / _____ | G. 9 (3) 4 9 — _____ / _____ |
| C. 7 (6) 8 3 — _____ / _____ | H. 8 (7) 5 3 — _____ / _____ |
| D. 6 3 5 (8) — _____ / _____ | I. 9 (9) 9 9 — _____ / _____ |
| E. (3) 5 6 1 — _____ / _____ | J. 4 5 (6) 7 — _____ / _____ |

II. a. four thousand six hundred fifty three 4,653

b. eight thousand three hundred twenty _____

c. four thousand forty _____

d. nine thousand three hundred thirty eight _____

e. seven thousand five hundred sixty six _____

P.O. 5.14.01.02

NAME: _____ CLASS: _____ DATE: _____

Directions: Write each number in expanded form.

| | | |
|---|---|---|
| A. | 5862 | 5000 + 800 + 60 + 2 |
| B. | 8166 | ____ + ___ + __ + ___ |
| C. | 9835 | ____ + ___ + __ + ___ |
| D | 7474 | ____ + ___ + __ + ___ |
| E. | 6928 | ____ + ___ + __ + ___ |
| F. | 1839 | ____ + ___ + __ + ___ |
| G. | 6458 | ____ + ___ + __ + ___ |
| H. | 8364 | ____ + ___ + __ + ___ |
| I. | 2142 | ____ + ___ + __ + ___ |
| J. | 7869 | ____ + ___ + __ + ___ |

18

36

P.O. 5.14.01.03

NAME: _____ CLASS: _____ DATE: _____

Directions: Write the standard numeral then use the key to break the code.

Key

| A | B | C | E | F | H | M | N | T | U |
|---|---|---|---|---|---|---|---|---|---|
| 7469 | 9574 | 8297 | 5678 | 8943 | 8391 | 5064 | 4753 | 6834 | 6869 |

5000+60+4
5064

M

7000+400+60+9

6000+800+30+4

8000+300+90+1

8000+200+90+7

7000+400+60+9

4000+700+50+3

3000+500+70+4

5000+600+70+8

8000+900+40+3

6000+800+60+9

4000+700+50+3

37

## 5.01.01 PLACE VALUE THROUGH HUNDRED THOUSANDS

(1-2 lessons)

**PERFORMANCE OBJECTIVES**

The student will be able to...

5.01.01.01A identify and write the place value of numbers through hundred thousands;
e.g.,

| | |
|---|---|
| 1<u>7</u>3,462 | <u>7</u> ten thousands |
| 46<u>5</u>,108 | <u>5</u> thousands |

5.01.01.02A compare two 6-digit numbers using the correct relation symbol (<, >).
e.g.,

154,631 < 272,376

5.01.01

**VOCABULARY**

| TERMS | SYMBOLS |
|---|---|
| is equal to | = |
| is less than | < |
| is greater than | > |
| place value | |

---

**GETTING STARTED**

Write a 3-digit number on the chalkboard, e.g., 865. Elicit the value of each digit. Ask a student to place the digits 865 onto a place value chart that has been drawn on the chalkboard. Ask students to read the value of each digit.

a) The digit (8) has a value of 800.
b) The digit (6) has a value of 60.
c) The digit (5) has a value of 5

| Hundreds | Tens | Ones |
|---|---|---|
| 8 | 6 | 5 |

Repeat this procedure using other numbers.

---

Give each student two index cards like these, [<] , [>] , and two others, each of which contains a different 3-digit number. Say, "Select the appropriate sign, and place it between the two numbers, e.g., [473] [<] [525] ." Ask the students to exchange their cards with each other.

**5.01.01.01 identify and write the place value of numbers through hundred thousands**

**STRATEGY 1:** Have the students prepare a set of ten index cards numbered 0 through 9 and a place value chart through hundred thousands. The students will use the cards to build a number in the place value chart. Say, "We will build a 6-digit number. Put the 2 in the ten thousands place, 8 in the thousands place, 4 in the ones place, 6 in the hundred thousands place, 7 in the tens place, and 9 in the hundreds place."

Select a student to read the number, e.g., 628,974. Write the number on the chalkboard. Say, "What is the value of the digit 6 in this number? How many ten thousands are in one hundred thousand?" This may be shown on the chalkboard by adding ten (10) ten thousands. Continue this procedure using other numbers.

**STRATEGY 2:** Ask students to prepare a set of ten index cards numbered 0 through 9. Ask the students to select any six cards. Tell the students to build the greatest number possible, the smallest number possible, and three different numbers between the smallest and the greatest number.

e.g.,

Using the digits 1, 2, 3, 4, 5, 6,
654,321 = greatest number
123,456 = smallest number

5.01.01

5.01.01.02 **compare two 6-digit numbers using the correct relation symbol (<, >)**

**STRATEGY 1:** Write a series of numbers on the chalkboard and ask individual students to go to the chalkboard and fill in the correct symbol, <, >. Use the following numbers.

535 275 473 315 315 439 250 510

After the correct symbols are filled in, write the following on the chalkboard.

| | | | |
|---|---|---|---|
| 535,000 | 473,000 | 315,000 | 250,000 |
| 275,000 | 315,000 | 439,000 | 510,000 |

Ask the students to come to the chalkboard and fill in the correct symbol.

**STRATEGY 2:** Write two 6-digit numbers on the chalkboard, e.g., 987,654; 321,987. Ask the students to count the number of digits in each number. Ask the students to observe the leftmost digit of the two numbers being compared. Stress that the first number 987,654 has the greater first digit. In the second number 321;987 the first digit is less than 9. When the number of digits in the numbers being compared are equal, the number which has the greater leftmost digit is the greater number and vice versa.

Write the following on the chalkboard.

146,000 136,275

Ask the students to look at the first digit of both numbers. It is the same. Explain that in this case, we compare the digits to the right of the first digit. Therefore, 146,275 > 136,275 because the digit 4 in the ten thousands place is greater than the digit 3 in the ten thousands place.

**STRATEGY 2:** cont'd

Write the following example on the chalkboard.

176,325 46,275

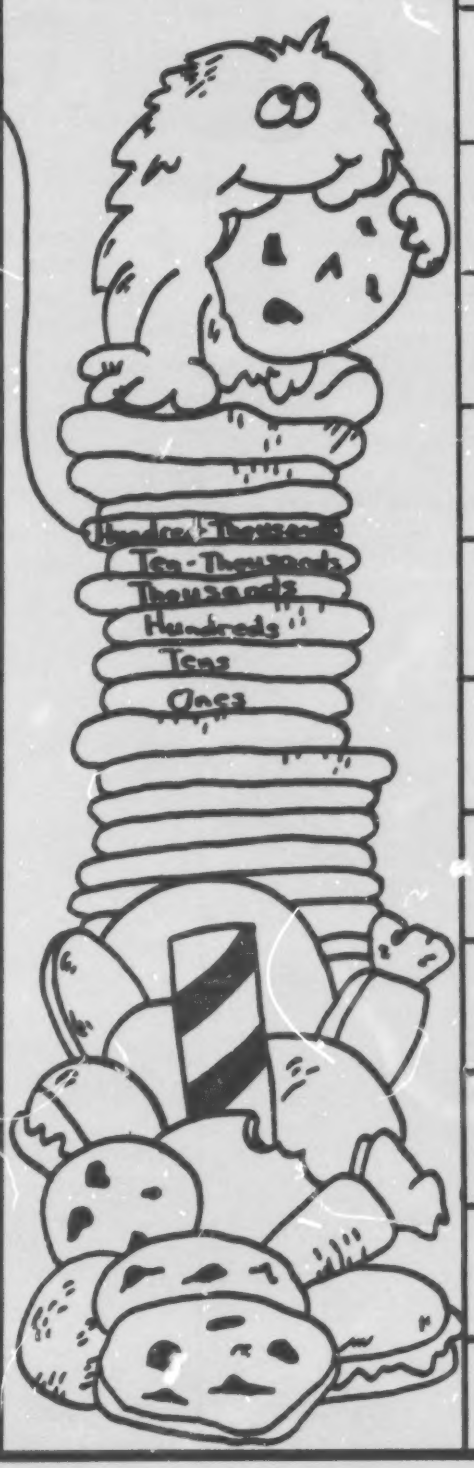
Ask the students to count the number of digits in the first number. Since 6 digits > 5 digits, a 6-digit number is greater than a 5-digit number, e.g., 176,325 > 46,275. Similarly, 240 < 3,721 because 3 digits < 4 digits. Place examples of the above on the chalkboard and ask the students to identify the correct relation symbol and explain their answers.

P.O. 5.01.01.01

NAME:_____ CLASS:_____ DATE:_____

Directions: Match the value of the underlined digit to its name. Write the expanded value of the underlined digit.

| Numeral | Value |
|---|---|
| 3̲52,637 | 300,000 |
| 438,52̲5 | |
| 820,1̲36 | |
| 935,437 | |
| 243,7̲10 | |
| 865,284 | |
| 270,3̲05 | |
| 934,86̲5 | |
| 438,2̲17 | |
| 5̲01,352 | |
| | |



P.O. 5.01.01.02

NAME:_____ CLASS:_____ DATE:_____

Directions: Fill in the circle with the correct sign < or > .

| | | | | | |
|---|---|---|---|---|---|
| 802,763 | > | 430,205 | 234,829 | | 234,729 |
| 952,713 | | 357,216 | 628,486 | | 630,422 |
| 100,351 | | 300,351 | 783,512 | | 782,512 |
| 457,824 | | 357,216 | 686,424 | | 687,424 |
| 865,213 | | 763,246 | 300,208 | | 300,207 |
| 327,815 | | 532,705 | 128,112 | | 200,400 |
| 463,276 | | 832,716 | 283,637 | | 273,636 |
| 121,318 | | 112,318 | 428,111 | | 428,101 |
| 202,408 | | 220,408 | 829,123 | | 830,002 |
| 334,512 | | 333,512 | 901,208 | | 902,208 |

## 5.01.02 ROUND 6-DIGIT NUMBERS

(2-3 lessons)

**PERFORMANCE OBJECTIVES**

The student will be able to...

5.01.02.01A round 6-digit numbers to the nearest ten thousand;

e.g.,

38,464 rounds to 40,000

73,752 rounds to 70,000

5.01.02.02A round 6-digit numbers to the nearest hundred thousand;

e.g.,

645,721 rounds to 600,000

391,112 rounds to 400,000

5.01.02.03A solve word problems related to skills learned in this module.

e.g.,

171,348 people attended the concert in Central Park. If this number is rounded to the nearest hundred thousand, about how many people attended the concert?

About 200,000 people attended the concert.

5.01.02

**VOCABULARY**

**TERMS**

rounding
approximate
interval

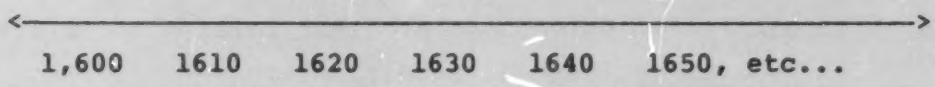
---

**GETTING STARTED**

Say, "There are 33 pupils in our class today. About how many pupils are present today? 20, 30 or 40? (30) The lunchroom will feed 841 pupils this afternoon. Approximately how many pupils will eat lunch? 700, 800 or 900? (800) A pair of new running shoes costs $49.85. About how much will they cost? $40, $50 or $60? ($50) Sometimes it is helpful to use numbers that give us an approximate idea of what we are talking about. These approximate numbers are called rounded numbers."

---

Draw a number line numbered in intervals of tens on the chalkboard from 1,600 through 1,700. Say, "Is 1,670 closer to 1,600 or 1,700?" Elicit that 1,670 is closer to 1,700. Mark 1,670 on the number line.




Repeat this procedure several times using the number line. Say, "When we say a number is closer to one end of the number line than the other end, we are rounding the number. In this case we have rounded the number to the nearest hundred." Stress the importance of 1,650, which is exactly in the middle of 1,600 and 1,700. Say, "When a number is 1,650 (or more) it is rounded up to 1,700." Give additional examples in which the number to be rounded is exactly in the middle of the rounded choices.

5.01.02

**5.01.02.01 round 6-digit numbers to the nearest ten thousand**

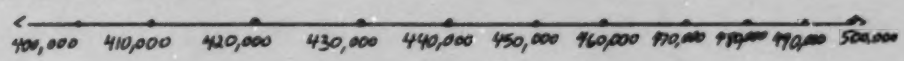
**STRATEGY 1:** Write a 6-digit number, e.g., 328,250, on the chalkboard. Ask the students to read this number. Identify and label the place value of each digit in this number.

e.g.,

| HTh | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| 3 | 2 | 8 | 2 | 5 | 0 |

Say, "When we round to the nearest ten thousand we look at the number in the thousands place (8). If the digit is 5 or more, round the number in the ten thousands place to the next highest number, making all the numerals in the places to the right (thousands, hundreds, tens, and ones) zeros. If the number in the thousands place is 4 or less the ten thousands place remains the same and all numbers in the places to the right (thousands, hundreds, tens, and ones) become zeros. Say, "Is 8 higher than 5? (Yes) If the thousands place is 5 or more do we round up or down?" (Up) Elicit from the students that 328,250 rounds to 330,000. Continue this procedure using other numbers.

**STRATEGY 2:** Draw a number line on the chalkboard, starting at 400,000, through 500,000 numbered in multiples of ten thousand:




Say, "458,742." Write this number on the chalkboard. Say, "Who can tell us the value of each interval on the number line? (10,000) We are going to round some numbers to the nearest ten thousand. Where does the number belong on the

**STRATEGY 2:** cont'd

number line?" Point to 458,742. Say, "What two numbers is it between? (450,000 and 460,000.) How do we decide which number it rounds to?" Remind the students that when rounding to the nearest ten thousand they are to look at the digit in the thousands place. If this digit is 5 or more, round the number in the ten thousands place (5) to the next highest ten thousand (6) and all the digits to the right (thousands, hundreds, tens, and ones) become zeros. If this digit is 4 or less, the ten thousands remains the same and all digits to the right (thousands, hundreds, tens, and ones) become zeros. Say, "458,742 rounds to 460,000." Repeat this procedure using other examples.

**5.01.02.02 round 6-digit numbers to the nearest hundred thousand**

**STRATEGY 1:** Write a 6-digit number such as 425,130 on the chalkboard. Ask a student to read this number aloud. Identify and label the place value of each digit in this number.

| HTh | TTh | Th | H | T | O |
|---|---|---|---|---|---|
| 4 | 2 | 5 | 1 | 3 | 0 |

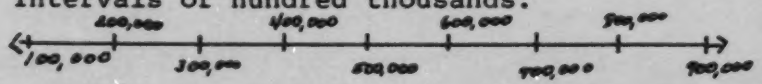
Explain that in rounding to the nearest hundred thousand you look at the digit in the ten thousands place. Point to the 2 in the number 424,130. Say, "If the digit is 5 or more, round the hundred thousands to the next highest numeral making all the digits to the right (ten thousands, thousands, hundreds, tens, and ones) zeros. If the number in the ten thousands place is 4 or less, the numeral in the hundred thousands place remains the same and

**STRATEGY 1:** cont'd

all digits to the right (ten thousands, thousands, hundreds, tens, and ones) become zeros. What is the digit in the ten thousand place?" (2) "Is it greater or less than 5?" (Less) "Do we round up or does the hundred thousands place stay the same?" (Same) "What does 425,130 round to?" (400,000)

Continue this procedure using other numbers, circling the ten thousands place.

**STRATEGY 2:** Draw a number line on the chalkboard numbered in intervals of hundred thousands.



Say, "732,100." Write this number on the chalkboard. Say, "We are going to round some numbers to the nearest hundred thousand." Point to the number 732,100. Say, "Where does the number belong?" (between 700,000 and 800,000) How do we decide which number it is closer to?" Remind the students that when rounding to the nearest hundred thousand they are to look at the number to the right of the hundred thousands place. Say, "If this number is 5 or more, round the digit in the hundred thousands place to the next highest digit, making all the digits to the right (ten thousands, thousands, hundreds, tens, and ones) zeros. If this digit is 4 or less, the digit in the hundred thousands place remains the same and all the numbers to the right (ten thousands, thousands, hundreds, tens, and ones) become zeros. What digit is in the ten thousands place?" (3) "Is it greater or less than 5?" (Less.) "Do we round the hundred thousands place up or does it remain the same?" (Same.) "732,100 rounds to 700,000."

Continue this procedure using other numbers.

5.01.02

5.01.02.03 **solve word problems related to skills learned in this module**

**STRATEGY 1:** Say, "There were 242,165 franks sold at yesterday's baseball game. Who can tell me about how many franks were sold, rounding this number to the nearest ten thousand?" (240,000) Review the rules for rounding. Say, "First find the place to which you are rounding (10,000). Next, look at the digit to the right of the ten thousand place. What is it?" (2) "If that digit is 5 or greater, round up. If that digit is less than 5, round down, making the digits to the right (thousands, hundreds, tens, and ones) zeros."

Say, "The highest mountain peak in the world is Mount Everest. It is 29,028 feet high. Round this number to the nearest thousand. Remember to check the hundreds place before you make your decision. Mt. Everest is about 29,000 feet high." If necessary, point out that 0 is less than 5.

**STRATEGY 2:** Divide the class into teams. Give each team problems to round to the nearest ten thousand. Have the students solve the problems. Select a student from one team to come to the chalkboard with the answer to one of his team's problems. If he/she is correct, the team earns a point. Then a member of the next team takes a turn. A member of one team may challenge another team's answer. If the challenger is correct, the challenger's team earns a point. The first team to reach seven points wins.

5.01.02

**STRATEGY 2:** cont'd

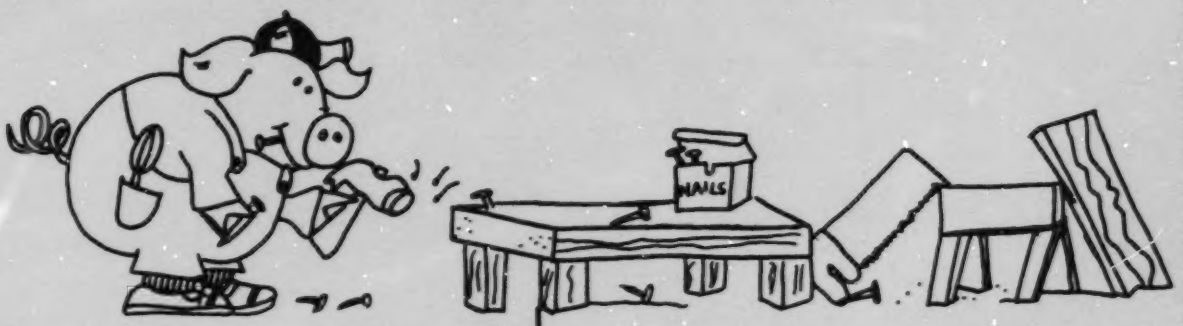
Ideas for problems:

1) number of visitors to a park function;
2) circulation of newspapers, magazines;
3) items of food sold at a fast food restaurant;
4) number of items of clothing made by a manufacturer.

P.O. 5.01.02.01

NAME:_____ CLASS:_____ DATE:_____

Directions: Part I Round each number to the nearest ten thousand.
Part II Rewrite each headline rounding the numbers to the nearest ten thousand.




| | | | |
|---|---|---|---|
| 34,830 | _____ | 208,450 | _____ |
| 41,640 | _____ | 621,290 | _____ |
| 76,106 | _____ | 851,485 | _____ |
| 147,605 | _____ | 479,100 | _____ |
| 354,299 | _____ | 535,645 | _____ |

The Board of Education will spend $268,104 on books for pupils.

The New York Mets had 53,105 spectators attend yesterdays game.

The Federal Government will hire 121,093 new workers to help rebuild city streets throughout the country.

P.O. 5.01.02.02

NAME: _____ CLASS: _____ DATE: _____

Directions: Round numbers to the nearest ten thousand and hundred thousand.

I. Round each number to the nearest ten thousand:

1) 26,400 _____ 2) 31,326 _____

3) 42,560 _____ 4) 71,344 _____

5) 56,000 _____ 6) 563,901 _____

III. Round each number to the nearest hundred thousand:

1) 201,840 _____ 2) 740,516 _____

3) 864,300 _____ 4) 453,275 _____

5) 387,217 _____ 6) 829,037 _____

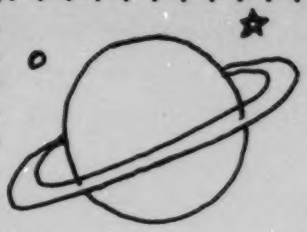
III. Complete the following chart:

| Number | Rounded to the nearest ten thousand | hundred thousand |
|---|---|---|
| 782,678 | | |
| 939,620 | | |
| 839,412 | | |
| 531,426 | | |
| 606,065 | | |
| 708,094 | | |
| 231,412 | | |
| 385,991 | | |

P.O. 5.01.02.03

NAME: _____ CLASS: ____ DATE: _____

Directions: Round to the place shown.



Rounding Numbers: round to the place shown.

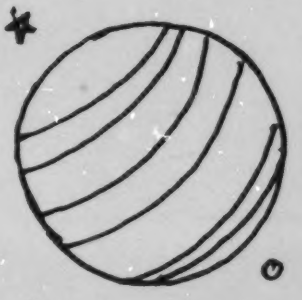
1. The diameter of Saturn is about _____ miles (thousands)
   74,187
2. The diameter of Jupiter is about _____ (ten thousand)
   887,712
3. The moon is approximately _____ miles from earth (ten thousand)
   247,667
4. The Earth is about _____ miles from the sun (hundred thousand)
   9[illegible],876,421

Round to the nearest hundred

2,364 6,451 7,290 5,745 6,720

Round to the nearest thousand

21,6[illegible]5 34,265 54,980 72,150



## 5.14.02 ADDITION
(ongoing)

**PERFORMANCE OBJECTIVES**

The student will be able to...

5.14.02.01 compute sums of 2- and 3-digit numbers without exchange;
e.g.,

$$\begin{array}{r} 23 \\ +56 \\ \hline 79 \end{array} \qquad \begin{array}{r} 472 \\ +315 \\ \hline 787 \end{array}$$

5.14.02.02 compute sums of 2- and 3-digit numbers with exchange.
e.g.,

$$\begin{array}{r} {\scriptstyle 1} \\ 48 \\ +35 \\ \hline 83 \end{array} \qquad \begin{array}{r} {\scriptstyle 1} \\ 657 \\ +235 \\ \hline 892 \end{array}$$

5.14.02

**VOCABULARY**

**TERMS**

addend

---

**GETTING STARTED**

Draw a group of 3 circles and a group of 4 circles on the chalkboard. Say, "How do we know how many circles are on the chalkboard?" Elicit from the students that we can count them one at a time or add the two groups. Write several basic addition facts on the chalkboard; e.g., $\begin{array}{r} 4 \\ +3 \\ \hline \end{array}$, $\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$. Point out that in addition the order of the addends does not change the sum.

---

Write addition examples using a one place number plus zero on the chalkboard; e.g., $\begin{array}{r} 6 \\ +0 \\ \hline \end{array}$, $\begin{array}{r} 7 \\ +0 \\ \hline \end{array}$, $\begin{array}{r} 9 \\ +0 \\ \hline \end{array}$. Ask a student to write the correct sum under each example. Say, "When we add zero to any number the sum is that same number.

5.14.02

5.14.02.01 **compute sums of 2- and 3-digit numbers without exchange**

**STRATEGY 1:** Prepare and distribute squared material to each student. Write following examples on the chalkboard.

$$\begin{array}{r} 23 \\ +56 \\ \hline \end{array} \qquad \begin{array}{r} 472 \\ +315 \\ \hline \end{array}$$

Ask the students to look at the first example.

Say, "In the number 23, how many tens and ones are there?" Elicit that there are 2 tens and 3 ones.

Say, "Use your squared material and make the number 23." Repeat this procedure for 56.

Ask the students to group their unit pieces together.

Say,"When we add numbers we always start in the ones place. How many ones do we have in all? (9) Now join the tens. How many tens do we have in all? (7) What new number did you make by joining the groups?" (79) Ask a student to write 79 under the bar in the example on the chalkboard. Continue this procedure with other 2- and 3-digit numbers.

**STRATEGY 2:** Write the following example on the chalkboard.

$$\begin{array}{r} 123 \\ +345 \\ \hline \end{array}$$

Say,"When we add we always start in the ones column. What digits are in the ones column? (3,5) How much does 3+5=□ ?" (8) Write the 8 in the ones column. Point out to the students that it is important to keep their columns straight. Continue this procedure adding the tens and hundreds columns. Say, "When we added 123 and 345 together

**STRATEGY 2:** cont'd

our sum was 468. We joined the addends to arrive at the sum." Continue this procedure using other 2- and 3-digit numbers.

**5.14.02.02 compute sums of 2- and 3-digit numbers with exchange**

**STRATEGY 1:**

Prepare and distribute squared material to each student. Write the following example on the chalkboard.

$$\begin{array}{r} 39 \\ +27 \\ \hline \end{array}$$

Ask the students to show these numbers with the squared material. Say, "We are going to combine this material to help us add. Put your unit squares together first, because we always start addition in the ones column. How many unit squares do you have? (16) Can we write 16 in the ones column? (no) What we must do is exchange ten units for one tens strip. Put the tens strip with your other tens and count the remaining ones. How many ones are left?" (6) Show this at the chalkboard.
e.g.,

$$\begin{array}{r} 39 \\ +27 \\ \hline 6 \end{array}$$

Say, "Now add all of your ten strips." (6) Write 6 on the chalkboard. Say, "What is our answer? (66) We know from our understanding of place value that no place can have a digit higher than 9; therefore, when we have a digit higher than 9, we must exchange the ten smaller pieces for one large piece." Continue this procedure using other 2- or 3-digit numbers.

**STRATEGY 2:** Prepare play money and distribute. Write the following example on the chalkboard.

$$\begin{array}{r} \$2.36 \\ +4.71 \\ \hline \end{array}$$

Say, "Use your play money to show $2.36. How many dollars do you have? (2) Dimes? (3) Pennies? (6). Now make $4.71." Elicit from the students that they have 4 dollars, 7 dimes, and 1 penny.

Say, "Add the pennies. How many do you have?" (7) Write the seven in the example.

$$\begin{array}{r} \$2.36 \\ +4.71 \\ \hline 7 \end{array}$$

Say, "Add the dimes. How many dimes do you have?" (10) We cannot have a digit higher than 9 in any place so what must we do?" Elicit from the students that they can exchange ten dimes for one dollar. Ask the students to make the exchange and place the dollar with their other dollars.

Say, "How many dimes are left?" (0) Show this step on the chalkboard.

$$\begin{array}{r} \$2.36 \\ +4.71 \\ \hline .07 \end{array}$$

Say, "Add your dollars. (7) Our answer to this problem is $7.07." Show this on the chalkboard.

$$\begin{array}{r} \$2.36 \\ +4.71 \\ \hline \$7.07 \end{array}$$

Continue this procedure using other numbers.

P.O. 5.14.02.01

NAME: _____ CLASS: _____ DATE: _____

Directions: Add. Then use the key to answer the riddle.

What Is A Boxer's Favorite Drink?

| | | | | |
|---|---|---|---|---|
| 58<br>+21<br>79<br>F | 324<br>+155 | 52<br>+36 | 720<br>+269 | 354<br>+425 |
| 36<br>+63 | 21<br>+67 | 360<br>+409 | 123<br>+321 | 234<br>+561 |

Key

| T | C | F | H | I | N | P | R | U |
|---|---|---|---|---|---|---|---|---|
| 779 | 444 | 79 | 795 | 989 | 769 | 99 | 479 | 88 |

42

P.O. 5.14.02.02

NAME:_____ CLASS:_____ DATE:_____

Directions: Add. Use the key to answer the riddle.

What Is A Teacher's Favorite Ice Cream Flavor?

| | | |
|---|---|---|
| a. $\begin{array}{r} 173 \\ +\ 242 \\ \hline 415 \end{array}$ | b. $\begin{array}{r} 653 \\ +\ 238 \end{array}$ | c. $\begin{array}{r} 27 \\ +\ 46 \end{array}$ |
| d. $\begin{array}{r} 65 \\ +\ 27 \end{array}$ | e. $\begin{array}{r} 519 \\ +\ 381 \end{array}$ | f. $\begin{array}{r} 192 \\ +\ 641 \end{array}$ |
| g. $\begin{array}{r} 206 \\ +\ 209 \end{array}$ | h. $\begin{array}{r} 296 \\ +\ 385 \end{array}$ | i. $\begin{array}{r} 261 \\ +\ 572 \end{array}$ |

| Key | A | C | E | H | K | L | T |
|---|---|---|---|---|---|---|---|
| | 415 | 891 | 73 | 92 | 900 | 833 | 681 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| b | d | a | f | c | - | i | a | h | c |

## 5.02.01 ADDITION OF TWO ADDENDS THROUGH 6-DIGIT NUMBERS

(2 lessons)

**PERFORMANCE OBJECTIVES**

The student will be able to...

5.02.01.01A add two 6-digit numbers with regrouping in any column (including money) and check;
e.g.,

| 11 1 | check |
|---|---|
| 507,996 | 632,517 |
| +124,521 | 507,996 |
| 632,517 | 124,521 |

5.02.01.02B estimate by rounding addends to the largest possible place;
e.g., 113,246 rounds to 100,000
+342,125 rounds to 300,000
400,000

5.02.01.03A solve word problems related to skills learned in this module.
e.g., John builds model bridges. Last month he used 124,890 toothpicks. This month he used 224,125 toothpicks. How many toothpicks did he use in all?

| estimate | add | check |
|---|---|---|
| 100,000 | 124,890 | 224,125 |
| +200,000 | +224,125 | +124,890 |
| 300,000 | 349,015 | 349,015 |

5.02.01

**VOCABULARY**

**TERMS**

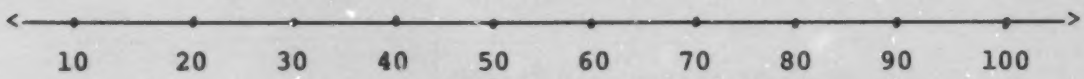
addend
sum

---

**GETTING STARTED**

Review rounding numbers to the nearest ten and the nearest hundred. Construct a number line on the chalkboard.

e.g.,




Say, "Where would 33 be on this number line? Between which pair of tens is it located?" (30 and 40) "To which ten is it closer?" (30) Recall with students that if the number is before the midpoint, e.g., 35, we say it is closer to 30. But if it is at the midpoint between the two tens or after it, we round it to the higher ten.

Prepare a number line counting by hundreds and follow the same procedure, asking the students to round 3-digit numbers to the nearest hundred.

---

Review renaming using a place value chart.

e.g.,

| hundred thousand | ten thousand | thousand | hundreds | tens | ones |
|---|---|---|---|---|---|
| | | | 2 | 4 | 0 |
| | | 4 | 1 | 0 | 0 |

Ask the students to name 24 tens another way. Elicit from the students that we cannot write two (2) digits in one place. Therefore, only the 4 can be written in the tens place, while the 2 must be written in the hundreds place. Therefore, 24 tens can also be expressed as 2 hundreds and 4 tens. Repeat with other examples, e.g., 41 hundreds = 4 thousands and 1 hundred.

5.02.01

5.02.01.01 **add two 6-digit numbers with regrouping in any column (including money) and check**

**STRATEGY 1:** Make a pocket chart with six pockets out of oaktag or construction paper. Cut corstruction paper into pieces about six inches long and two inches wide to be used in the pockets of the chart. Use six different colors of construction paper, one for each place value, e.g., red strips for the ones place, blue strips for the tens place, ...

pocket chart

| Hundred Thousands | Ten Thousands | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|---|
| | | | | | |

Say, "An airplane traveled 236,495 miles last year. This year that same airplane flew 195,442 miles. How many miles did the airplane fly all together?" Elicit from the students that addition is required to solve this problem. Ask a student to write the addends on the chalkboard.

$$\begin{array}{r} 236{,}495 \\ +195{,}442 \\ \hline \end{array}$$

Ask another student to use the colored strips to represent the top addend in the pocket chart; (two yellow strips in the hundred thousands pocket; three green strips in the ten thousands pocket; six purple strips in the one thousands pocket; four orange strips in the hundreds pocket; nine blue strips in the tens pocket; and five red strips in the ones pocket). Another student represents the lower addend in the same pocket chart so that both amounts are represented together. Ask a student to come to the pocket chart and count all the strips in the ones place (7) and then go to the example on the chalkboard and total the digits in the ones place (7).

**STRATEGY 1:** cont'd

Repeat this procedure for the strips in the tens place, asking a student to rename the 13 tens as 1 hundred and 3 tens by trading ten of his blue strips for one orange strip which is placed in the hundreds pocket. The student then totals the digits in the tens place on the chalkboard example, noting the regrouping of 10 tens for one hundred and listing it in the hundreds column. Repeat this procedure until the final sum is reached. Ask another student to come to the chalkboard to check this sum by writing the lower addend on top and the top addend below it to form a new example.

$$\begin{array}{r} 195{,}442 \\ +236{,}495 \\ \hline \end{array}$$

Ask a student to find the sum, checking to see if it is the same as the sum in the first example.

Repeat with other 6-digit numbers.

**STRATEGY 2:** Say, "A movie theater sold $4,356.25 worth of tickets to the Friday night show and $3,641.55 worth of tickets to the Saturday afternoon show. How much did the theater make for both shows?" Elicit from the students that addition is required to solve this problem.

Construct a place value chart on the chalkboard.

| $1000.00 (Thousand dollar bills) | $100.00 (Hundred dollar bills) | $10.00 (Ten dollar bills) | $1.00 (one dollar bills) | | 10¢ (dimes) | 1¢ (pennies) |
|---|---|---|---|---|---|---|
| 4 | 3 | 5 | 6 | . | 2 | 5 |
| + 3 | 6 | 4 | 1 | . | 5 | 5 |

Ask a student to write the addends in the place value chart. Ask another student to total the digits in the 1¢ column by saying, "How many pennies in all?" When the student counts 10 pennies (5 + 5 = 10), ask if we can trade that for

**STRATEGY 2:** cont'd a different coin. Elicit that ten pennies can be exchanged for one dime, with no pennies left over. Ask the student to put a zero in the pennies place and put an extra 1 in the dimes place to represent the dime we just received in exchange.

| $1000.00 thousand dollar bill | $100.00 hundred dollar bill | $10.00 ten dollar bill | $1.00 one dollar bill | | 10¢ dimes | 1¢ pennies |
|---|---|---|---|---|---|---|
| 4 | 3 | 5 | 6 | . | ⓪2 | 5 |
| 3 | 6 | 4 | 1 | . | 5 | 5 |
| | | | | | | 0 |

Ask another student to add the digits in the dimes place (1 + 2 + 5 = 8 dimes). Write the 8 in the dimes place. Continue adding in each place, renaming when necessary. Ask another student to write the addends on the chalkboard without the place value chart, only this time put the lower addend on top and the top addend on the bottom.

$3,641.55
+ 4,356.25

Ask a student to find the sum. Say, "Does it match the sum of the first example? (yes) Why?" (Because the order of the addends does not change the sum). Explain that we can use this to help us check addition.

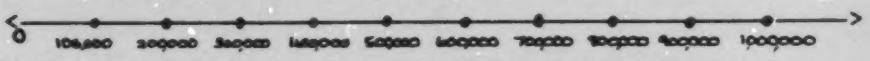
Repeat this procedure with other money amounts through six digits.

**5.02.01.02 estimate by rounding addends to the largest possible place**

**STRATEGY 1:** Present the following problem: "A fishing boat caught 235,260 fish last year. Another boat caught 461,295 fish. About how many fish did both

**STRATEGY 1:** cont'd

boats catch?" Elicit from the students that it is much easier to count if we round the numbers first. Construct a number line numbered from 0 through 1,000,000 in multiples of 100,000 on the chalkboard.




Explain that in order to know which hundred thousand a number is closer to, we must know the midpoint between a pair of hundred thousands. Elicit from the students that 50,000 is the midpoint between 0 and 100,000; 150,000 is the midpoint between 100,000 and 200,000, ...

Ask a student to write the addends on the chalkboard.

$$\begin{array}{r} 235{,}260 \\ +461{,}295 \end{array}$$

Select a student to read the first addend, and then, using the number line, tell between which pair of hundred thousands it can be found (235,260 comes between 200,000 and 300,000). Explain that it comes before the midpoint of 250,000; therefore, it is closer to 200,000. Write the following on the chalkboard.

$$\begin{array}{l} 235{,}260 \text{ rounds to } 200{,}000 \\ \underline{+461{,}295} \end{array}$$

Repeat this procedure, estimating where 461,295 would be found on the number line (between 400,000 and 500,000). Elicit that it is closer to 500,000 because it is past the midpoint of 450,000. Write the following on the chalkboard.

$$\begin{array}{rr} 235{,}260 \text{ rounds to} & 200{,}000 \\ 461{,}295 \text{ rounds to} & \underline{+500{,}000} \\ & 700{,}000 \end{array}$$

Explain that adding the rounded numbers is easy and can be done mentally. Elicit that about 700,000 fish were caught by both boats.

Repeat this procedure for rounding and estimating numbers through six digits.

**STRATEGY 2:** Say, "A bus driver drove 238,514 miles last year. He drove 374,106 miles this year. Approximately how many miles did he travel in all?" Since we do not have to find the exact sum, elicit from the students that we can estimate the sum by rounding. Write the addends on the chalkboard.

238,514
+374,106

Say, "It will be easier to estimate if we round each addend to the nearest hundred thousand." Ask a student to circle the digit in the hundred thousands place in the first addend.

238,514
+374,106

Explain that (2) in the hundred thousands place tells us that this number is between 200,000 and the next hundred thousand which is 300,000. Direct another student to put a line under the number to the right of the circled digit (ten thousands place).

238,514
+374,106

Elicit that this digit represents 30,000. Say, "We don't have to go any further with the digits because we can see that 230,000 is closer to 200,000 than it is to 300,000 so we round it to 200,000." Write the following on the chalkboard.

238,514 rounds to 200,000
+374,106

Repeat this procedure with the second addend. Say, "Now that both addends have been rounded, we can estimate how many miles the bus driver traveled in all." Elicit from the students that the sum of the two rounded addends is 600,000; therefore, the bus driver drove about 600,000 miles in all.

Repeat this procedure with similar addends.

5.02.01

5.02.01.03 **solve word problems related to skills learned in this module**

**STRATEGY 1:** Say, "In Oakville the population is 235,639 people. The neighboring town has a population of 147,565 people. How can we find out how many people live in both towns?" Elicit from the students that addition is required to solve this problem. Say, "Do you think there will be more than 200,00 or less than 200,000 people?" (more) "Why?" Elicit from the students that the sum will be greater than either addend.

Prepare to estimate by rounding each addend to the nearest hundred thousand. Ask a student to write the addends on the chalkboard. 235,639 rounds to
+147,565 rounds to

and to round each addend to the nearest hundred thousand, writing it on the chalkboard after the words "rounds to."

235,639 rounds to 200,000
+147,565 rounds to +100,000

Ask a student to find the sum of the rounded addends and write it on the chalkboard. (300,000) Say, "Now that we know about how many people are in the two towns, let's go back to the exact numbers and find the real total." Ask the students to add the exact numbers from the problem. Select a student to write the sum on the chalkboard. (383,204) Ask the students to compare the real sum to the estimate.

As a check, ask a student to write the addends on the chalkboard, putting the bottom addend at the top and the top addend below it.
e.g.,

147,565
+235,639

**STRATEGY 1:** cont'd

Direct the students to find the sum again. Say, "What do you notice about this sum and the previous sum?" (They are the same.) Inform students that this method is used to check addition.

Repeat this procedure using problems with numerals through six digits.

**STRATEGY 2:**

Say, "The building superintendent collected $435.50 rent from Mr. Cruz and $395.75 rent from Mrs. Barr. How much rent money did he collect all together?" Elicit from the students that addition is necessary to solve the problem because we are joining sets. Ask a student to write the addends on the chalkboard.

$$\begin{array}{rl} \$435.50 & \text{rounds to } \$400.00 \\ \underline{+\ 395.75} & \text{rounds to } \underline{+\ 400.00} \end{array}$$

Then ask the students to estimate the sum. ($800.00) Next, instruct the students to add the exact addends to find the sum. ($831.25) Ask the students to compare the sum to the estimate. Say, "Were we very close?"

As a check of their addition, allow a student to write the example on the chalkboard again and solve it, this time putting the bottom addend on top and the top addend below.

$$\begin{array}{r} \$395.75 \\ \underline{+\ 435.50} \\ \$831.25 \end{array} \text{ rent}$$

Elicit from the students that the sum is the same because changing the order of the addends in addition does not change the sum (commutative property).

Repeat this procedure using other money amounts through six digits.

P.O. 5.02.01.01

NAME: _____ CLASS: _____ DATE: _____

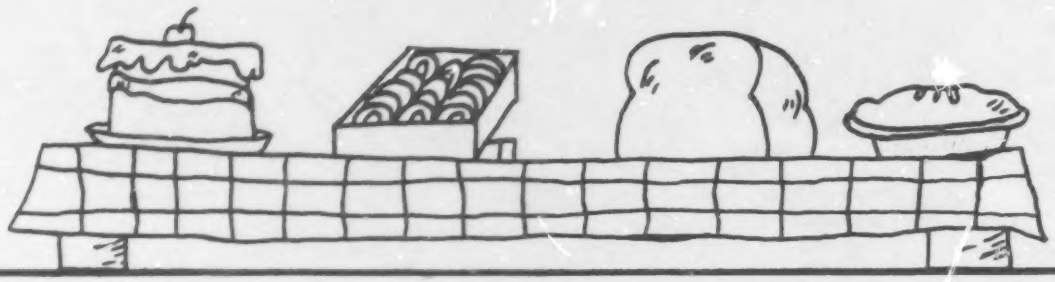
Directions: Solve and check each example.

| ADD | CHECK | ADD | CHECK |
|---|---|---|---|
| 4,348<br>+2,614 | 2,614<br>+4,348 | 347,293<br>+219,475 | |
| 2,645<br>+5,791 | | 274,362<br>+159,008 | |
| 4,978<br>+4,266 | | 764,013<br>+145,327 | |
| 15,325<br>+62,704 | | 264,381<br>+225,490 | |
| $28.46<br>+ 14.95<br>$ | | $2643.27<br>+ 1952.61<br>$ | |
| $263.07<br>+ 145.99<br>$ | | $7432.98<br>+ 427.60<br>$ | |

P.O. 5.02.01.02

NAME:_____ CLASS:_____ DATE:_____

Directions: Follow the directions in each box.



Round each number to the nearest thousand.

| | | | |
|---|---|---|---|
| 6,234 | _____ | 7,584 | _____ |
| 2,975 | _____ | 1,046 | _____ |
| 1,796 | _____ | 4,489 | _____ |

Round each number to the nearest ten thousand.

| | | | |
|---|---|---|---|
| 24,317 | _____ | 71,966 | _____ |
| 19,455 | _____ | 55,418 | _____ |
| 26,740 | _____ | 84,600 | _____ |

Round each number to the nearest hundred thousand.

| | | | |
|---|---|---|---|
| 375,164 | _____ | 195,200 | _____ |
| 631,208 | _____ | 586,314 | _____ |
| 756,675 | _____ | 413,769 | _____ |

P.O. 5.02.01.03

NAME:_____ CLASS:_____ DATE:_____

Directions: Read each problem. Estimate the answer, solve and check in the labeled box below each problem.

The Parker Avenue School spent $354.80 for all the 5th grade children to go the the circus. Then the school spent $296.50 for the 5th grade children to go to the Planetarium. How much did the school spend in all?

| Estimate | Solve | Check |
|---|---|---|
| | | |

On Monday 347,196 people rode the subway to New York City. On Tuesday 483,103 people rode the subway. How many people rode the subway on both days?

| Estimate | Solve | Check |
|---|---|---|
| | | |

In one year the Smith family drove their car 27,684 kilometers. The following year they drove their car 15,293 kilometers. How far did they drive during the two years?

| Estimate | Solve | Check |
|---|---|---|
| | | |

P.O. 5.02.01.03

NAME:_____ CLASS:_____ DATE:_____

Directions: Read each problem. Estimate the answer, solve, and check in the labeled boxes below each problem.

On Friday 236,483 people were at the circus. On Saturday 473,293 people were at the circus. How many people were there both days?

| Estimate | Solve | Check |
|---|---|---|
| | | |

At the Burger Shack 46,725 hamburgers and 20,495 orders of french fries were sold. How many hamburgers and french fries were sold in all?

| Estimate | Solve | Check |
|---|---|---|
| | | |

Last month $2,436.20 was spent at the County Fair. This month $1,879.65 was spent there. How much was spent there for both months?

| Estimate | Solve | Check |
|---|---|---|
| | | |

## 5.14.03 SUBTRACTION

(ongoing)

**PERFORMANCE OBJECTIVES**

The student will be able to...

5.14.03.01 compute differences of 2- and 3-digit numbers without exchange;
e.g.,

$$\begin{array}{r} 87 \\ -42 \\ \hline 45 \end{array} \qquad \begin{array}{r} 865 \\ -234 \\ \hline 631 \end{array}$$

5.14.03.02 compute differences of 2- and 3-digit numbers with exchange.
e.g.,

$$\begin{array}{r} 63 \\ -25 \\ \hline 38 \end{array} \qquad \begin{array}{r} 752 \\ -114 \\ \hline 638 \end{array} \qquad \begin{array}{r} 832 \\ -289 \\ \hline 543 \end{array}$$

5.14.03

**VOCABULARY**

**TERMS**

minuend
difference

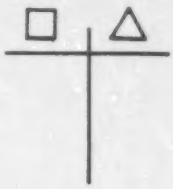
---

**GETTING STARTED**

Write the following examples on the chalkboard, e.g. 15-6=□, 15-9=□. Ask a student to come to the chalkboard and solve the examples. Say, "These are related subtraction facts. If you know one you will be able to figure out the other one." Continue this procedure using other related facts.

---

Make a "Guess My Rule" chart on the chalkboard.

e.g., 


Say, "Give me a number. I will write it on the chart under the □. I am going to do something to the number and write the answer in the △ column."

e.g.

| □ | △ |
|---|---|
| 8 | 5 |
| 7 | 4 |
| 12 | 9 |

"Who can guess my rule?" Elicit from the students that you subtracted three from each number. Write on the chalkboard □-3=△. Ask students to fill in the box and triangle using the numbers in the table to check for accuracy.

Select students to make their own rules, and continue this procedure.

5.14.03

5.14.03.01 **compute differences of 2- and 3-digit numbers without exchange**

**STRATEGY 1:** Write the following example on the chalkboard.

$$\begin{array}{r} 87 \\ -42 \\ \hline \end{array}$$

Ask a student to read the two numbers aloud. Elicit from the students the number of ones in each number. Select a student to subtract the ones. Repeat this procedure for the tens. Say, "Our answer, which is called the difference, is 45." Continue this procedure for 3-digit numbers.

**STRATEGY 2:** Prepare and distribute squared material to each student. Write the following example on the chalkboard.

$$\begin{array}{r} 65 \\ -43 \\ \hline \end{array}$$

Ask the students to regroup 65. (6 tens + 5 ones)

Say, "Place 6 ten strips and 5 unit squares on your desks. " Elicit from the students the number of ones in 43. (3)

Say, "Take away 3 ones from the 5 ones on your desk. How many are left? (2) How many tens are in 43? (4) Take away 4 tens from the tens on your desk. How many are left?" (2) Write 22 under the example. Say, "22 is called the difference." Continue this procedure using other 2- and 3-digit numbers.

5.14.03

5.14.03.02 **compute differences of 2- and 3-digit numbers with exchange**

**STRATEGY 1:** Prepare and distribute squared material to each student. Write the following examples on the chalkboard.

$$\begin{array}{rrr} 63 & 752 & 832 \\ -\underline{25} & -\underline{114} & -\underline{289} \end{array}$$

Point to the first example. Elicit from the students the number of tens and ones in 63. Ask the students to place 6 tens and 3 ones on their desks using their squared material. Say, "Take away 5 ones." Elicit from the students that they cannot do this. They must exchange one ten for ten ones. Say,"Take away one of your tens. How many tens are left? (5) Now exchange the ten for 10 ones and place them with the 3 ones. How many ones do you have in all? (13) Now take away five. How many are left?" (8) Write this step on the chalkboard.

$$\begin{array}{r} 63 \\ -\underline{25} \\ 8 \end{array}$$

Say, "Take away 2 tens. How many are left? (3) What is our answer?" (38) Write this on the chalkboard.

$$\begin{array}{r} 63 \\ -\underline{25} \\ 38 \end{array}$$

Point to the second example. Ask the students how this is different from the example they just completed.

Elicit that it has three places.

Say, "We do this example the same way, only we have one more place in which we must subtract."

**STRATEGY 1:** cont'd

Point to the third example. Elicit from the students the number of hundreds, tens, and ones in 832. Ask the students to use their squared material to show 8 hundreds, 3 tens, and 2 ones. Say, "Take away 9 ones." Elicit from the students that they must exchange 1 ten for 10 ones. Say, "Do this and tell us the number of tens left. (2)... the number of ones. (12) Now take away 9 ones. How many are left?" (3) Write this step on the chalkboard.

$$\begin{array}{r} 832 \\ -289 \\ \hline 3 \end{array}$$

Say, "Take away 8 tens." Elicit from the students that they cannot do this. Say, "We must take one hundred and exchange it for 10 tens. Make this exchange using your material. How many hundreds are left? (7) How many tens do we have now? (12) Take away 8. How many are left?" (4) Show this on the chalkboard.

$$\begin{array}{r} 832 \\ -289 \\ \hline 43 \end{array}$$

Say, "Now take away 2 hundreds. How many are left?" Complete the example on the chalkboard.

$$\begin{array}{r} 832 \\ -289 \\ \hline 543 \end{array}$$

Ask the students to look at the example on the chalkboard so that they can see how to represent the exchange. Emphasize the steps - first the ones, then the tens, then the hundreds. Continue this procedure with other numbers.

**STRATEGY 2** Write the following examples on the chalkboard.

$$\begin{array}{r} 63 \\ -25 \\ \hline \end{array} \qquad \begin{array}{r} 832 \\ -289 \\ \hline \end{array}$$

Say, "How many ones are in 63? (3) Take away 5." Elicit from the students that this cannot be done. Say, "We must exchange 1 ten for 10 ones. We add the 10 ones to the ones we already have." Show this step on the chalkboard.

$$\begin{array}{r} 63 \\ -25 \\ \hline 8 \end{array}$$

Ask a student to complete the example. Point to the second example. Say, "How many ones in 832?" (2) "Take away 9." Elicit from the students that in order to do this we must exchange 1 ten for 10 ones.

Ask a student to subtract the ones column. (3) Write the 3 in the example.

$$\begin{array}{r} 832 \\ -289 \\ \hline 3 \end{array}$$

Say, "Can we take away 8 tens?" Elicit from the students that we must exchange one hundred for 10 tens. Show this representation on the chalkboard.

$$\begin{array}{r} 832 \\ -289 \\ \hline 3 \end{array}$$

Say, "How many hundreds do we have now? (7) How many tens?" (12) Ask a student to subtract in the tens column. Select another student to complete the example.

Continue this procedure using other 2- and 3-digit numbers.

P.O. 5.14.03.01

NAME: _____ CLASS: _____ DATE: _____

Directions: Subtract. Use the key to solve the riddle.

# What Is A Ghost's Favorite Food ?

| Key | B | E | G | L | M | O | U |
|---|---|---|---|---|---|---|---|
| | 211 | 111 | 444 | 24 | 40 | 41 | 343 |

| | | | | | |
|---|---|---|---|---|---|
| (a) | 526<br>-315<br>211 | (b) | 224<br>-113 | (c) | 987<br>-543 |
| (d) | 68<br>-44 | (e) | 90<br>-50 | (f) | 987<br>-946 |
| (g) | 876<br>-665 | (h) | 569<br>-226 | (i) | 451<br>-410 |

| | | | | | |
|---|---|---|---|---|---|
| B | | | | | |
| a | f | i | g | d | b |

| | | |
|---|---|---|
| c | h | e |

P.O. 5.14.03.02

NAME: _____ CLASS: _____ DATE: _____

Directions: Subtract. Use the key to solve the riddle.

What do bulls eat?

| Key | B | E | L | N | O | U | Y |
|---|---|---|---|---|---|---|---|
| | 181 | 48 | 287 | 19 | 628 | 379 | 29 |

| | | |
|---|---|---|
| a. 605 − 424 = 181 | b. 84 − 36 = | c. 422 − 135 = |
| d. 38 − 19 = | e. 854 − 226 = | f. 823 − 444 = |
| g. 52 − 23 = | h. 409 − 122 = | i. 837 − 550 = |

B ___ ___ ___ - ___ ___ ___ ___ ___

a f c h i e d b g

## 5.03.01 SUBTRACTION THROUGH 6-DIGIT NUMBERS

(2-3 lessons)

**PERFORMANCE OBJECTIVES**

The student will be able to...

5.03.01.01A subtract a 6-digit number from a 6-digit number with regrouping in any column and check;

e.g.,

| | check |
|---|---|
| 3<br>794,046 | 433,125 |
| -433,125 | +360,921 |
| 360,921 | 794,046 |

5.03.01.02B estimate differences by rounding minuends and subtrahends (less than 1 million) to the nearest 100,000;

e.g.,

to the nearest hundred thousand 294,246 rounds to 300,000
to the neareast hundred thousand 183,125 rounds to -200,000
100,000

5.03.01.03B solve word problems related to skills learned in this module.

e.g.,

There were 214,632 people living in Hawley. 111,241 moved away. How many people were left in Hawley?

| compute | check |
|---|---|
| 214,632 | 103,391 |
| -111,241 | +111,241 |
| 103,391 | 214,632 |

5.03.01

**VOCABULARY**

**TERMS**

minuend
subtrahend

---

**GETTING STARTED**

Prepare base ten materials. Place on the chalkboard ledge, 4 thousand cubes, 2 hundred squares, 6 ten strips, and 5 units. Ask a student to take away 2,753. Write 4,265

$$\underline{-2,753}$$

on the chalkboard. Ask a student to subtract in the ones and tens place using the material.

Say, "What must be done so that I can take away 7 hundreds from 2 hundreds?" Elicit that one thousand must be regrouped as 10 hundreds. Say, "How many hundreds do I have now? (12) I need to take 7 away. Please hand me seven. How many hundreds are left?" Ask a student to subtract in the thousands place.
Say, "How many bundles of ten sticks?"

Repeat this procedure using other numbers.

---

Distribute squared materials to each student (thousands, hundreds, tens, and ones). Write the following example on the chalkboard.

$$\begin{array}{r} 9854 \\ \underline{-6428} \end{array}$$

Ask the students to show 9 thousands, 8 hundreds, 5 tens, and 4 ones.

Say, "Take away 8 ones." Elicit that this cannot be done. Say, "Is there anything that can be done to get enough ones?" Elicit the exchange of one bar of 10 for 10 ones. Record the following on the chalkboard. 9854

$$\underline{-6428}$$

Say, "Can the subtraction be completed now?" Ask a student to finish the example. Repeat this procedure with an exchange of thousands for hundreds and hundreds for tens.

5.03.01

5.03.01.01 **subtract a 6-digit number from a 6-digit number with regrouping in any column and check**

**STRATEGY 1:** Draw a place value chart on the chalkboard through hundred thousands. Write a 6-digit number on the chart.

| H. Th. | T. Th. | Th. | H. | T. | O. |
|---|---|---|---|---|---|
| 5 | 8 | 6 | 7 | 4 | 1 |

Select a student to write this number in expanded form, e.g.,500,000 + 80,000 + 6,000 + 700 + 40 + 1. Write another number in the place value chart, e.g., 569,831. Ask a student to write this number in expanded form under the first expanded number.

500,000 + 80,000 + 6,000 + 700 + 40 + 1
-500,000 + 60,000 + 9,000 + 800 + 30 + 1

Place a subtraction symbol to the left of the second expanded number. Say, "First subtract the numbers in the ones column and the tens column. What must we do to subtract in the hundreds column? (regroup) We regroup one thousand for 10 hundreds." Show this in the example. Complete the subtraction in the hundreds column. Say, "Can we subtract in the thousands column? What must we do?" Elicit from the students that we must regroup 1 ten thousand for 10 thousands. Show the regrouping in the example. Ask the students to complete the example. Say, "Let us do the same example in standard form. Write the following example on the chalkboard.

586,741
-569,831

Ask a student to come to the chalkboard, do the example, and show the regrouping from thousands to hundreds and ten thousands to thousands. Say, "To

**STRATEGY 1:** cont'd

check our work we add the subtrahend and the difference. If the total is equal to the minuend, we know we are right." e.g.,

$$\begin{array}{r} 586{,}741 \\ -569{,}831 \\ \hline 16{,}910 \end{array} \qquad \begin{array}{r} 569{,}831 \\ +\ 16{,}910 \\ \hline 586{,}741 \end{array}$$

**STRATEGY 2:** Prepare play money through hundred thousand dollars, and place value cards through hundred thousands. Have a large desk or table in front of the classroom. On the table have place value cards.

| Hundred Thousand | Ten Thousand | Thousand | Hundreds | Tens | Ones |
|---|---|---|---|---|---|

Ask a student to come up and show the number 453,753 on the place value chart using the play money.

| 400,000 | 50,000 | 3,000 | 700 | 50 | 3 |
|---|---|---|---|---|---|

Write the following example on the chalkboard.

$$\begin{array}{r} 453{,}753 \\ -131{,}921 \\ \hline \end{array}$$

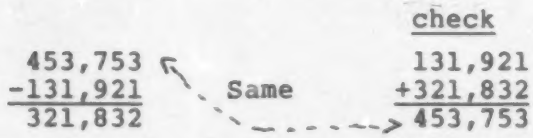
Say, "We have already represented the number 453,753 in our place value chart with play money. We want to take away 131,921. We start in the ones column on the chart and take away 1 from 3 and have 2 left. Write 2 in the ones place. Next go to the tens column in our place value chart and take 2 away from 5 and have 3 left. Write 3 in the tens place. Now, in the hundreds column on our chart we have seven hundreds, but we cannot take away nine hundreds. What should we do?" Elicit from the students that we must take one of the thousands and exchange it for 10 hundreds. Place the 10 hundreds in the hundreds column to make 17 hundreds. Say, "We now have 17 hundreds and we can take away 9 hundreds, which leaves 8 hundreds."

5.03.01

**STRATEGY 2:** cont'd

Write 8 in the hundreds place. Proceed to the thousand column on the chart that now has 2 thousands and continue to subtract, using the chart as an aid. When completed, both the chart and the algorithm appear as below.

| Hundred Thousand | Ten Thousand | Thousand | Hundreds | Tens | Ones |
|---|---|---|---|---|---|
| 3 | 2 | 1 | 8 | 3 | 2 |




Say, "To check, add the subtrahend and the difference. The total is the same as the minuend; therefore, we know we are correct."

5.03.01.02 **estimate differences by rounding minuends and subtrahends (less than 1 million) to the nearest 100,000**

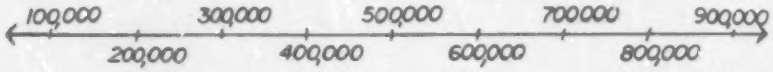
**STRATEGY 1:** Prepare a pack of cards with 6-digit numbers written on them. Say, "When we round a 6-digit number, e.g., 378,453, to the nearest hundred thousand, it is important to look at the number in the ten-thousand place. If the number is 5 or more we round up. If it is less than 5 we round down. Let's play a game." Divide the class into two teams (Blue and Red). Select a player from each team. Say, "You will be shown a number which must be rounded to the nearest hundred-thousand, e.g., 412,842. Whichever player says, '400,000' wins the round. Show the class several cards and the team with the most cards wins. Say, "Let's estimate the difference between 711,419 and 297,173 by rounding." Write the following on the chalkboard.

**STRATEGY 1:** cont'd

711,419 rounds to 700,000 — 700,000
297,173 rounds to 300,000 — -300,000

Select a student to subtract. Say "Our estimate is 400,000".

**STRATEGY 2:** Draw a number line on the chalkboard with colored chalk numbered from 100,000 through 900,000.




Say, "In our number line we are counting by 100,000. We are going to round numbers to the nearest hundred thousand. When rounding to the nearest hundred thousand, our key is the ten thousand column. If the number in the ten thousand column is 5 or greater what do we do? (Round up) If the number is less than 5?" (Round down)

Write a number on the chalkboard, e.g., 773,811. Ask a student to point to the place on the number line where he/she thinks the number would fall. Place an X on the line between 700,000 and 800,000 and write the number above the X, as below.

773,811

700,000 X 800,000

Say, "Which number is 773,811 closer to, 700,000 or 800,000? (800,000). Why?" Elicit that in the number 773,811, the digit in the ten thousand place is more than 5, so we round up to 800,000.

Say, "We round to help us subtract by estimating. Remember that an estimate is an approximate not an exact answer." Write the following on the chalkboard.

887,423
-209,211

Select two students to come up and round these numbers to the nearest hundred thousand.

**STRATEGY 2:** cont'd

887,423 rounds to 900,000
-209,211 rounds to +200,000

Select another student to come to the chalkboard and subtract the rounded example.

900,000
-200,000
700,000

Continue this procedure using other numbers.

5.03.01.03 **solve word problems related to skills learned in this module**

**STRATEGY 1:** Write the following on the chalkboard.

In a certain town there are 439,216 people, of which 211,316 are males. How many females are there in this town?

Say, "Before we find the actual answer we will estimate our result." Ask a student to come to the chalkboard and estimate.

439,216 rounds to 400,000
211,316 rounds to 200,000

Say, "To find the number of females, what must we do?" Elicit that we must subtract the number of males from the total population. Ask another student to come to the chalkboard and perform the subtraction using the estimated numbers.

400,000
-200,000
200,000

Say, "Now that we have estimated that there are approximately 200,000 females in the town, let us find the exact number." Ask another student to come to the

**STRATEGY 1:** cont'd

chalkboard and perform the subtraction.

```
  439,216  Total
 -211,316  Males
 ---------
  227,900  Females
```

Say, "We now want to find out if our answer is correct. How do we do this?" Elicit from the students that we check by addition. Ask a student to come to the chalkboard and perform the check.

```
People    439,216                    211,316  Males
Males    -211,316   Same           +227,900  Females
Females   227,900   ------------->  439,216  People
```

Say, "Since the total number of people in both computations is the same, we performed our subtraction correctly."

**STRATEGY 2:** Write the following on the chalkboard.

Joe saved $8,596.67. He purchased a car for $6,825.32. How much money does he have left?

Ask a student to come to the chalkboard and solve the problem. Ask the following questions:

1. What are you given?
2. What do you have to find?
3. What must you do in order to get the answer?

Elicit the answers to the above questions from the student. Ask the student to perform the subtraction in order to arrive at the answer.

```
  7 15
  8,596.67
 -6,825.32
 ---------
  1,771.35
```

Say, "Could we have found the approximate answer by estimating?" Select a student to show the estimated answer on the chalkboard.

```
  8,596.67  ---------->  9,000.00
 -6,825.32  ---------->  -7,000.00
 ---------
  1,771.35  ---------->  2,000.00
```

**STRATEGY 2:** cont'd

Ask another student to come to the chalkboard and verify if the above computations are correct. Ask the student how he/she can do this. Elicit that we check by addition.

Have a student perform the addition on the chalkboard.

$$\begin{array}{r} 6{,}825.32 \\ +1{,}771.35 \\ \hline 8{,}596.67 \end{array}$$

Write the following on the chalkboard.

$$\begin{array}{r} 8{,}596.67 \\ -6{,}825.32 \\ \hline 1{,}771.35 \end{array} \quad \text{Same} \quad \begin{array}{r} 6{,}825.32 \\ +1{,}771.35 \\ \hline 8{,}596.67 \end{array}$$

Say, "Since Joe had $8,596.67 to begin with and he spent $6,825.32 for a car, he had $1,771.35 left. We checked this by adding $1,771.35 to $6,825.32 and we arrived at the original amount.

P.O. 5.03.01.01

NAME: _____ CLASS: _____ DATE: _____

Directions: Regroup where necessary and subtract.

| | | |
|---|---|---|
| 852,731<br>-113,421 | | 755,849<br>-460,738 |
| 591,884<br>-134,730 | | 398,245<br>-176,934 |
| 702,530<br>-380.261 | | 865,767<br>-535,484 |
| 560,437<br>-248,213 | | 837,984<br>-527,693 |
| 957,034<br>-635,612 | | 748,291<br>-316,750 |
| 885,472<br>-343,731 | | 866,375<br>-484,254 |
| 648,968<br>-319,584 | | 241,865<br>-118,423 |
| 299,368<br>-184,863 | | 773,414<br>-491,302 |
| 774,843<br>-415,313 | | 585,374<br>-122,196 |

74

P.O. 5.03.01.02

NAME: _____ CLASS: _____ DATE: _____

Directions: Round each number and subtract.

| | |
|---|---|
| 534,265<br>-211,375<br>500,000<br>- 200,000<br>300,000 | 544,397<br>-118,257 |
| 878,156<br>-543,275 | 443,792<br>-142,439 |
| 776,352<br>-343,295 | 900,637<br>-881,751 |
| 632,765<br>-118,463 | 551,724<br>-259,934 |
| 492,987<br>-134,986 | 374,857<br>-191,253 |
| 192,376<br>-134,757 | 450,445<br>-210,843 |
| 886,275<br>-434,389 | 766,813<br>-312,245 |
| 519,275<br>-111,432 | 845,375<br>-281,434 |
| 464,105<br>-223,275 | 335,415<br>-192,165 |

P.O. 5.03.01.03

NAME: _____ CLASS: _____ DATE: _____

Directions: Solve and check.

1. Rosa purchased a car for $5,138.25. She had $8,943.84 saved up. How much money did she have left?

| Estimate | Compute | Check |
|---|---|---|
| $ 9,000.00 | $ 8,943.84 | $ 5,138.25 |
| - 5,000.00 | - 5,138.25 | + 3,805.59 |
| $ 4,000.00 | $ 3,805.59 | $ 8,943.84 |

2. If the moon is about 235,000 miles from earth and a spaceship is 10,000 miles away from earth, how far is the spaceship form the moon?

3. If it costs $2,873.34 to go to California and $1,564.31 to go to Houston, how much will you save by going to Houston?

4. Our house needs repairs. It is estimated that repairs will cost $3,475.27. If we have $2,134.64 saved up, how much money will we have left after completing repairs?

5. A questionnaire was sent to 912,473 people. Only 594,365 people sent it back. How many people did not answer the questionnaire?

## 5.13.01 SETS

(1-2 lessons)

**PERFORMANCE OBJECTIVES**

The student will be able to...

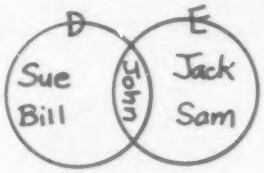
5.13.01.01A identify the set which is the union of two finite sets using Venn diagrams;

e.g.,

A U E = (Bill, Sue, John, Jack and Sam)

5.13.01.02A identify the set which is the intersection of the two finite sets using Venn diagrams;

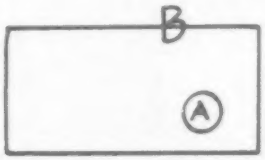
e.g.,




D ∩ E = (John)

5.13.01.03A use a Venn diagram to show that the members of subset A are also members of the universal set B.

e.g.,



5.13.01

**VOCABULARY**

**TERMS**

union
intersection
finite
sets
elements
subset
Venn Diagram
empty set
disjoints

---

**GETTING STARTED**

Put several objects in a box, e.g., ruler, chalk, marble, eraser... Have three plastic see-through cups on a table labeled A, B, and C. Ask a student to select three items and put them in the cup marked A. Say, "The items in the cup will make up a set, the collection of things in the cup. Each of the items in the cup are called the elements or members of the set A." Ask another student to come up and select three other items from the box and place them in the cup marked B. Say, "This will be Set B and the items in the cup are the elements or members of Set B." Write the following on the chalkboard.

Set A = {ruler, chalk, marble}

Set B = {eraser, book, gum}

Say, "Are there any members in Set A that are also in Set B?" (No) "We call these sets that have no members in common, separate or disjoint sets."

Place the third cup on the table marked C. Say, "This cup has no members or items in it. We call Set C the empty set."

---

Ask three boys in the class to step to one side of the room. These boys will make up Set A, a collection of people. Give one boy a

P.O. 5.10.05.C2

NAME: _____ CLASS: _____ DATE: ___/___

Use the information given to help you answer each question.

| INFORMATION BOX | Sample Question |
|---|---|
| 60 seconds = 1 minute<br>60 minutes = 1 hour | ☐ minutes = $\frac{1}{2}$ hour<br>$\frac{1}{2}$ of 60 = 30<br>$\frac{1}{2}$ hour = [30] minutes |

| | |
|---|---|
| ☐ min. = $\frac{3}{4}$ hr. | 180 sec. = ☐ min. |
| ☐ seconds = $\frac{1}{2}$ min. | 240 sec. = ☐ min. |
| ☐ seconds = $\frac{1}{4}$ min. | 540 sec. = ☐ min. |
| ☐ seconds = 2 min. | 120 min. = ☐ hr. |
| ☐ seconds = 5 min. | 160 min. = ☐ hr. |
| ☐ min. = $\frac{1}{4}$ hr. | 90 min. = ☐ hr. |
| ☐ min. = $\frac{1}{6}$ hr. | 20 min. = ☐ hr. |

How many seconds are in one hour? (show all work)

P.O. 5.10.08.03

NAME: _____ CLASS: _____ DATE: _____

Answer each question below.

# 10 years = 1 decade

1. 30 years = ☐ decades
2. 50 years = ☐ decades
3. 80 years = ☐ decades
4. ☐ years = 4 decades
5. ☐ years = 9 decades
6. ☐ years = 2 decades

7. What year will it be in 2 decades? _____

8. What year was it 4 decades ago? _____

9. My age is ____ decades and ____ years.

10. It is now 2003. What year was it 3 decades ago?
_____

11. It is now 1776. What year will it be in 5 decades?
_____

P.O. 5.10.08.04

NAME: _____ CLASS: _____ DATE: _____

Draw a box around the time periods which are a century.

1776 - 1876 1940 - 1950 1632 - 1657

1983 - 2083 1540 - 1550

1801 - 1807 1492 - 1592 1923 - 1933

1970 - 1980 1980 - 1990

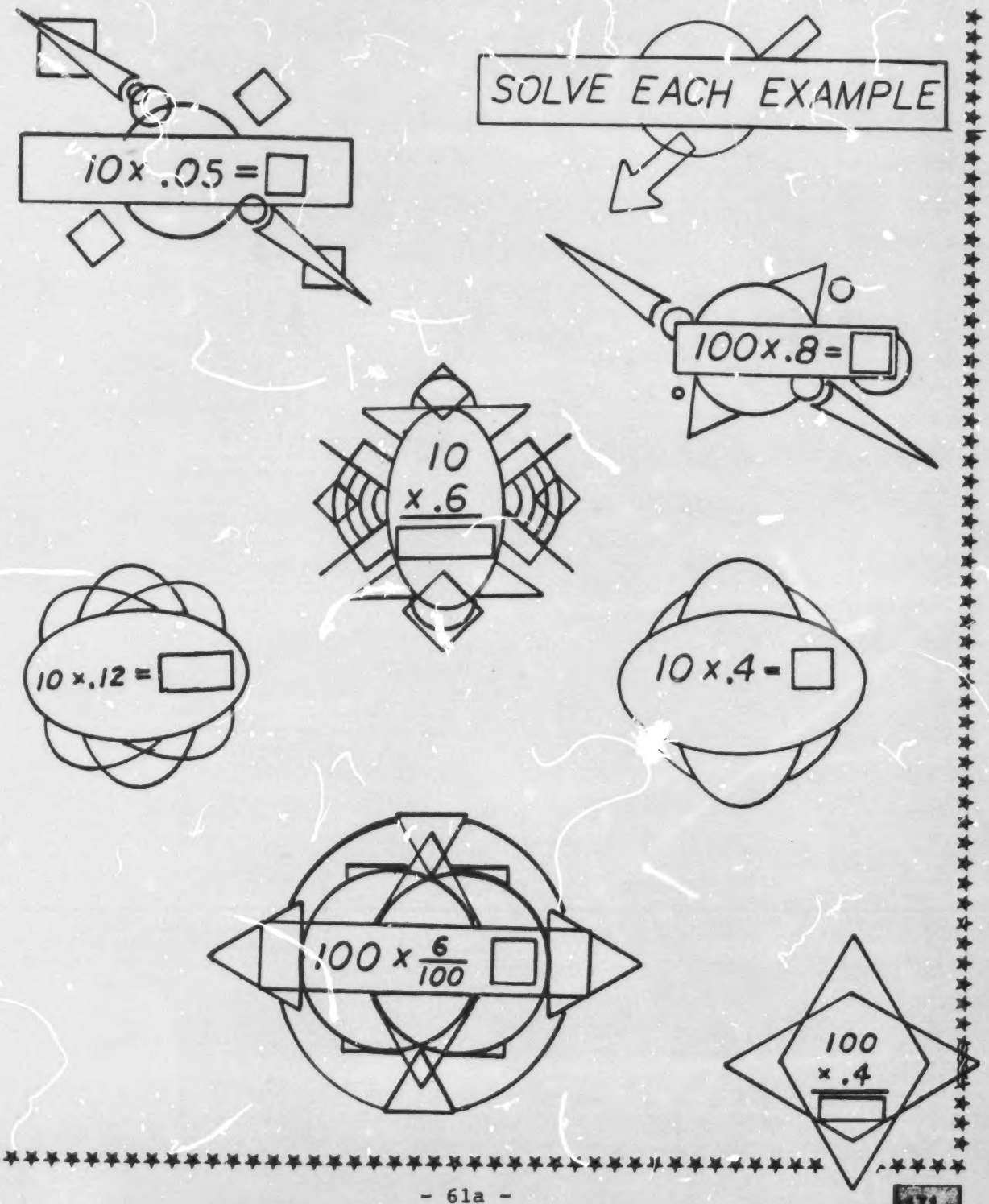
1926 - 1930 1845 - 1945 1700 - 1800

1675 - 1775 1901 - 1912

P.O. 5.07.03.01

NAME: _____ CLASS: _____ DATE: _____

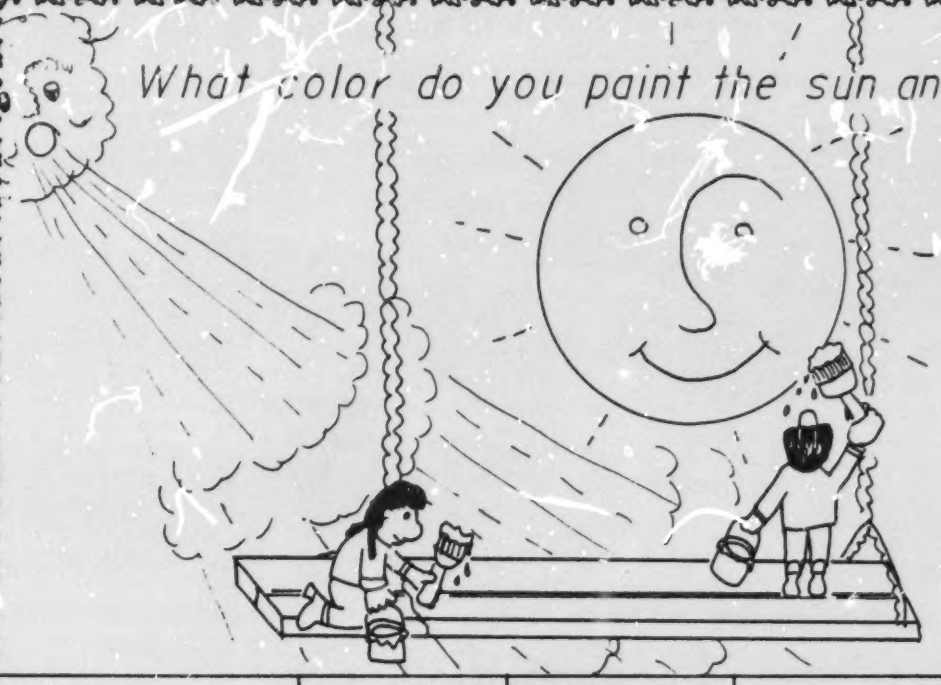
Solve each example.



P.O. 5.07.03.02

NAME: _____ CLASS: _____ DATE: _____

Multiply. Use the key to solve the riddle.



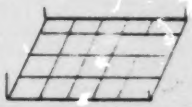
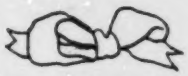
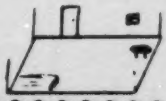

| | | | | |
|---|---|---|---|---|
| The SUN, | 5.2 × 0.7 = 3.64 R | 0.24 × 0.25 = ___ | 0.15 × 0.64 = ___ | 1.6 × 2.3 = ___ |
| The WIND, | 5.54 × 2.63 = ___ | 8.91 × .72 = ___ | 6.4 × .8 = ___ | 2.3 × 1.6 = ___ |

| KEY | B | E | L | O | R | S | U |
|---|---|---|---|---|---|---|---|
| | 14.5702 | 3.68 | 6.4152 | 0.06 | 3.64 | 0.096 | 5.12 |

P.O. 5.07.03.03

NAME:_____CLASS:_____DATE:_____

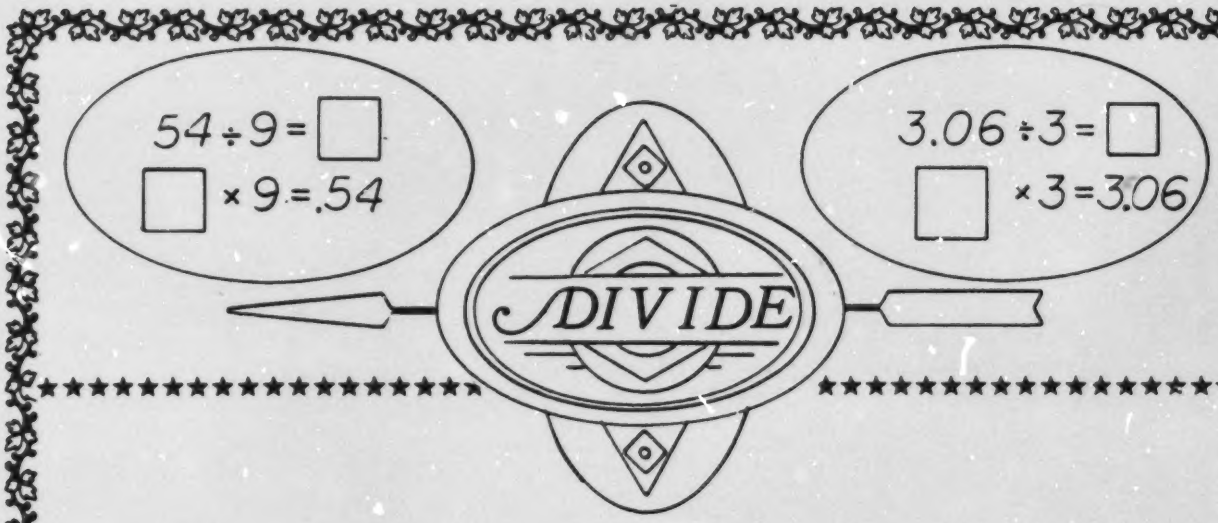
Solve each problem. Remember to put the decimal point in the correct place.

| | |
|---|---|
| 1. Jose's mother is buying tile for her kitchen. The kitchen measures 8.4 feet by 13.7 feet. How many square feet of tile does she need?<br>_____<br>  | Work Space |
| 2. Maria wants to make three dresses. Each dress requires 3.7 yards of material. How much material does she need?<br>_____<br> | |
| 3. Carol has 12 pieces of ribbon. Each piece measures 17.5 yards. How many yards of ribbon does she have?<br>_____<br>  | |
| 4. Phillip jogs. 0.7 miles everyday. How many miles does he jog in 14 days?<br>_____<br> | |
| 5. George and David are brothers. They are arguing about the size of their rooms. George's room is 9.1 feet by 12.6 feet. Davids room is 8.3 feet by 13.7 feet. Who has the bigger room?<br>  _____ | |

P.O. 5.07.04.01

NAME: _____ CLASS: _____ DATE: _____

Divide.




5)46.5

6)40.8

3)104.1

$6.00 ÷ 2 = □

2)$6.00

$3.46 ÷ 2 = □

)

$4.13 ÷ 7 = □

)

P.O. 5.07.04.02

NAME: _____ CLASS: _____ DATE: _____

Write equivalent decimal fractions by multiplying by fractions equivalent by 1.

Example:

$$\frac{.28}{.56} = \frac{.28}{.56} \times \frac{100}{100} = \frac{28}{56}$$

| | | |
|---|---|---|
| 1. $\frac{.4}{.8} =$ | 2. $\frac{.2}{.6} =$ | 3. $\frac{.3}{.9} =$ |
| 4. $\frac{.39}{.78} =$ | 5. $\frac{.45}{.90} =$ | 6. $\frac{.66}{.22} =$ |
| 7. $\frac{.500}{.250} =$ | 8. $\frac{.276}{.552} =$ | 9. $\frac{.333}{.666} =$ |

P.O. 5.07.04.03

NAME:_____ CLASS:_____ DATE:_____

Solve.

Example

John bought 4 long playing records. He paid $22.95. Each record cost the same amount. How much did he pay for 1 record?

$5.74
4 ) $22.96
20
29
28
16
-16
0

$5.74
× 4
$22.96

1. The school band bought 2 guitars which cost $135.50 How much did each guitar cost cost?

2. Mr. Rivera wants to split $475.50 among his four children. How much money will each receive?

3. A class of 28 students sold candies for the amount of $105.00. What was the avera average sale per student?

4. Mrs. Johnson wants to split $332.80 equally among the 32 students in her class. How much money will each student get?

P.O. 5.01.06.01

NAME: _____ CLASS: _____ DATE: _____

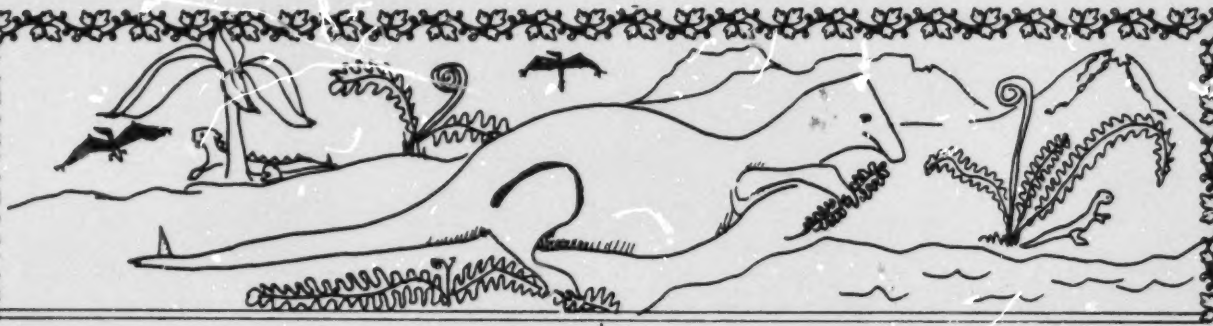
I. Write in expanded notation.
II. Write the standard number.

| I | II |
|---|---|
| 1. 5,320,425<br>5,000,000+300,000+<br>20,000+400+20+5 | 7. 100,000,000+30,000,000+<br>300,000+20,000+1,000+<br>400+20+6<br>130,321,426 |
| 2. 7,421,925 | 8. 200,000,000+30,000,000+<br>5,000,000+400,000+20,000+<br>1,000+600+40+9<br>_____ |
| 3. 9,124,295 | 3,000,000+400,000+<br>50,000+1,000+600+90+4<br>9. _____ |
| 4. 25,290,421 | 20,000,000+1,000,000+<br>500,000+20,000+5,000+<br>300+70+5<br>10. _____ |
| 5. 75,621,042 | 400,000,000+20,000,000+<br>500,000+30,000+2,000+<br>400+20+5<br>11. _____ |
| 6. 97,217,409 | 5,000,000+200,000+<br>90,000+1,000+200+40+7<br>12. _____ |

P.O. 5.01.06.02

NAME: _____ CLASS: _____ DATE: _____

Which numeral is greater than the other. Write (<, > or =)



1. 425,533 ○ 435,353

2. 990,625 ○ 991,256

3. 6,295,429 ○ 6,275,924

4. 7,500,479 ○ 8,500,974

5. 78,629,421 ○ 79,926,214

6. 89,923,497 ○ 90,923,497

7. 251,421,562 ○ 261,124,123

8. 390,450,686 ○ 391,416,490

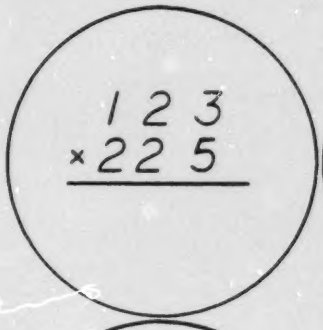
9. 945,359,416 ○ 946,953,164

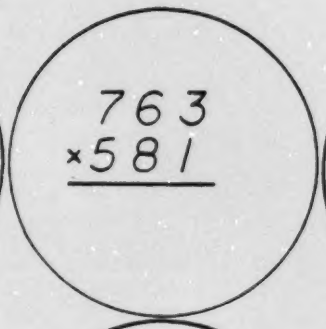
10. 678,214,265 ○ 688,142,625

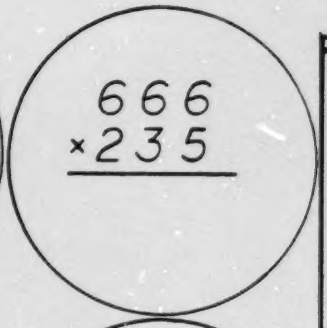
P.O. 5.04.05.01

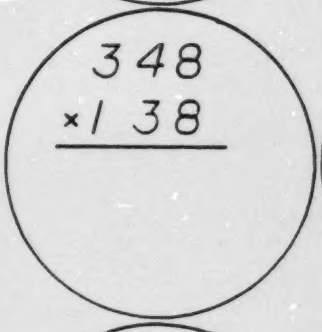
NAME:_____ CLASS:_____ DATE:_____

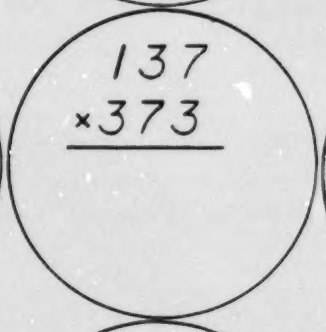
Multiply. Look for the product in the answer column. If you find the product color the circle. If you can't find the answer leave the circle blank. Connect the colored circles.

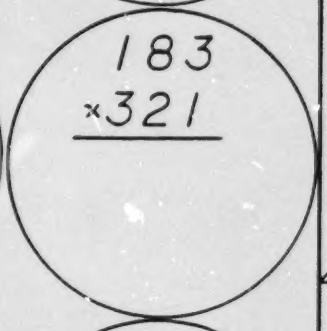


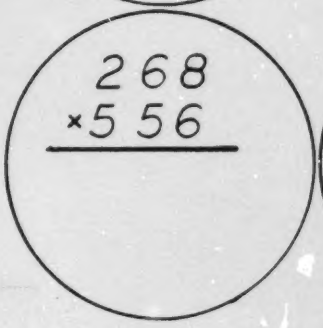



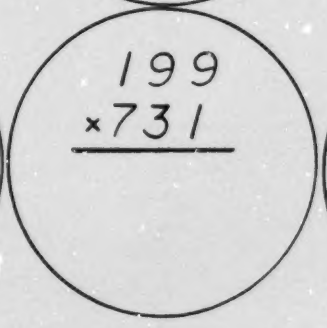



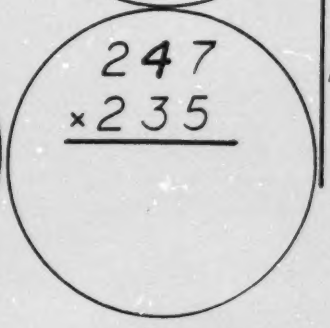




Answers

149,008

51,101

58,743

27,675

58,045

48,024

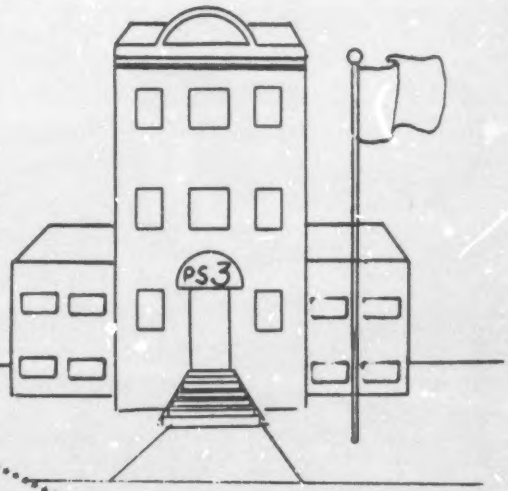
156,510

P.O. 5.04.05.02

NAME: _____ CLASS: _____ DATE: _____

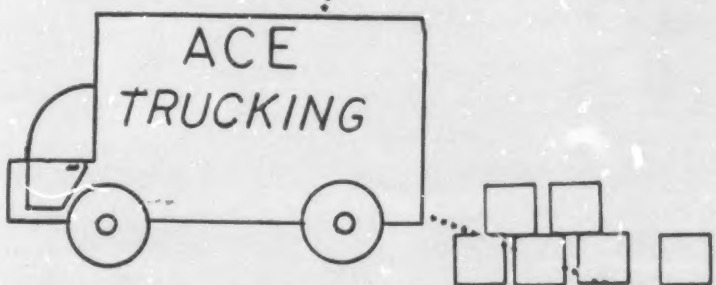
Solve the problems.

There are 153 schools in a city. Each school has 364 students. How many students are in the city's schools?




A store has 372 boxes of toy cars. Each box contains 114 cars. How many cars are in the store?

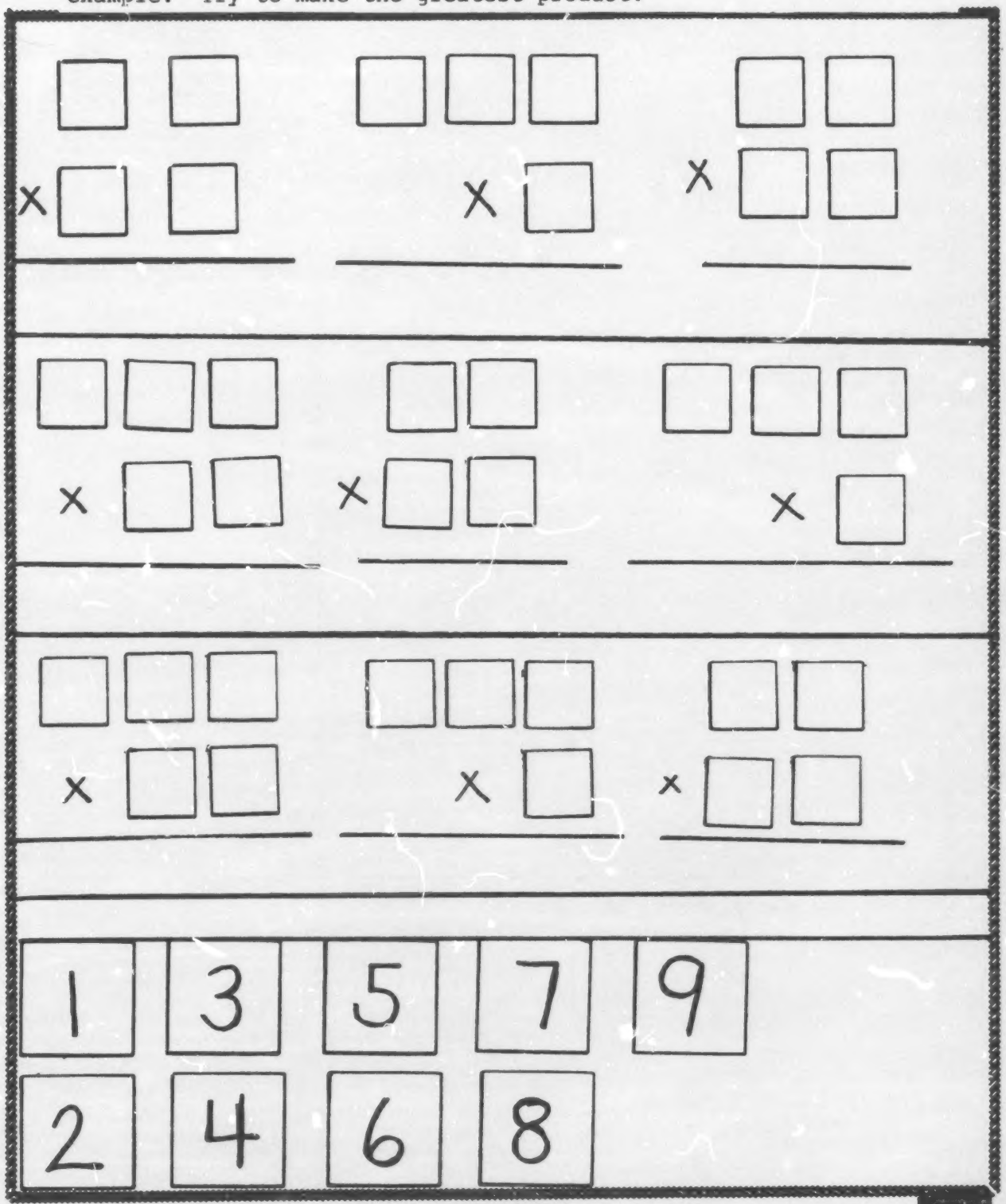
A truck can carry 346 crates. If a company owns 123 trucks, what is the greatest number of crates it can carry at one time?



P.O. 5.13.05.01

NAME: _____ CLASS: _____ DATE: _____

Cut out the numbered squares. Place them face down on your desk. Pick several numbers. Write the numbers in the boxes in the first example. Try to make the greatest product.



P.O. 5.13.05.02

NAME:_____ CLASS:_____ DATE:_____

Guess and check to find the solutions to these problems.

1. Andre wants to take some friends to a concert. Seats in the orchestra cost $7 and seats in the balcony cost $5. He has $50.00 and wants to buy 8 seats. How many can be in the orchestra and how many can be in the balcony?

2. The product of two numbers is 315. The sum of the same numbers is 36. What are the numbers?

3. How many times would you subtract 27 from 6,493 to show a number less than 27 as a remainder?

   Guess_____

   Check _____

P.O. 5.13.05.02

NAME:_____CLASS._____DATE:_____

Guess and check to find the solutions to these problems.

1. Andre wants to take some friends to a concert. Seats in the orchestra cost $7.00 and seats in the balcony cost $5.00. He has $50.00 and wants to buy 8 seats. How many can be in the orchestra and how many can be in the balcony?

2. The product of two numbers is 315. The sum of the same numbers is 36. What are the numbers?

3. How many times would you subtract 27 from 6,493 to show a number less than 27 as a remainder?

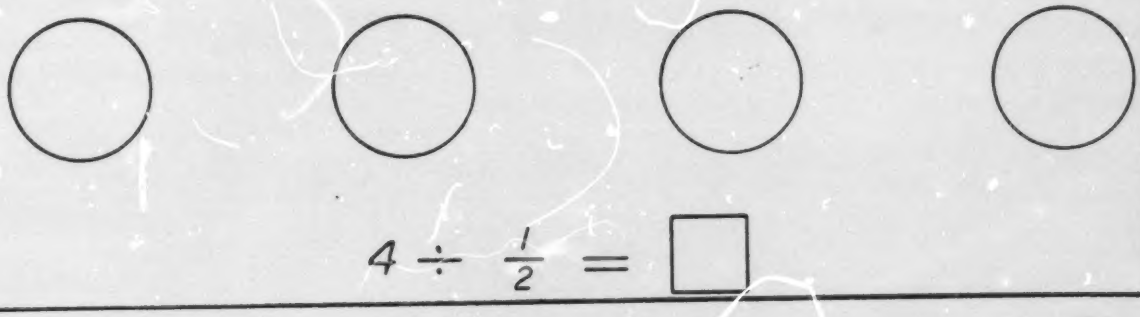
   Guess _____

   Check _____

P.O. 5.06.07.01

NAME:_____ CLASS:_____ DATE:_____

Divide each figure to find the quotient.



$4 \div \frac{1}{2} = \square$

$5 \div \frac{1}{4} = \square$

$3 \div \frac{1}{6} = \square$

P.O. 5.06.07.02

NAME:_____ CLASS:_____ DATE:_____

Find the reciprocal for the following fractions, improper fractions or whole numbers. Check by multiplying. Number 1 is done for you.

1) $\frac{2}{4} = \frac{\boxed{4}}{\boxed{2}}$

CHECK:

$\frac{2}{4} \times \frac{4}{2} = \frac{8}{8} = 1$

2) $9 = \frac{\square}{\square}$

CHECK:

3) $\frac{4}{3} = \frac{\square}{\square}$

CHECK:

4) $\frac{\square}{\square} = \frac{1}{6}$

CHECK:

5) $\square = \frac{18}{1}$

CHECK:

6) $\frac{6}{8} = \frac{\square}{6}$

CHECK:

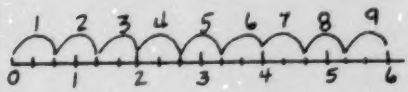
P.O. 5.06.07.03

NAME: _____ CLASS: _____ DATE: _____

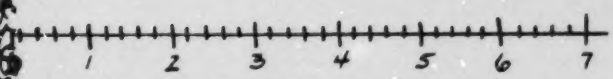
Find the quotient using the reciprocal of the divisor. Check your quotient using the number lines.

1) $6 \div \frac{2}{3} = \square$

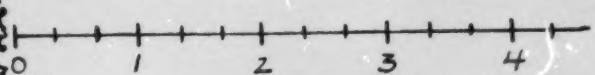
$\frac{6}{1} \times \frac{3}{2} = \frac{18}{2} = 9$



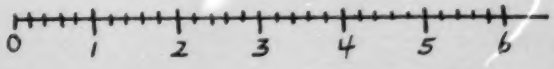

2) $7 \div \frac{4}{5} = \square$



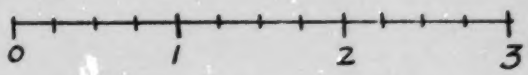

3) $4 \div \frac{4}{3} = \square$



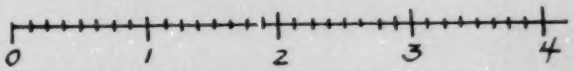

4) $6 \div \frac{2}{5} = \square$




5) $3 \div \frac{2}{4} = \square$



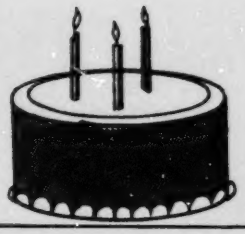

6) $4 \div \frac{4}{8} = \square$



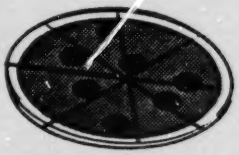
P.O. 5.06.07.03

NAME:_____ CLASS:_____ DATE:_____

1. There were 5 cakes in a bakery. Each cake was cut into fourths. How many pieces were there?

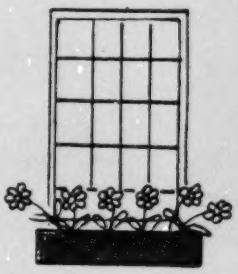


2. Mrs. Jones bought 4 pizzas. She cut each pizza into eighths. How many pieces did she have?



3. How many pieces of metal each $\frac{2}{8}$ of an inch long can be cut from a metal bar that is 48 inches long?

4. Mrs. Johnson bought a 16 pound bag of potting soil. If she uses $\frac{4}{5}$ of a pound in each window box how many window boxes can she fill?



P.O. 5.06.08.01

NAME: _____ CLASS: _____ DATE: _____

Find the quotient.

1) $4 \div 2\frac{1}{2}$

2) $6 \div 1\frac{2}{3}$

3) $5 \div 1\frac{3}{4}$

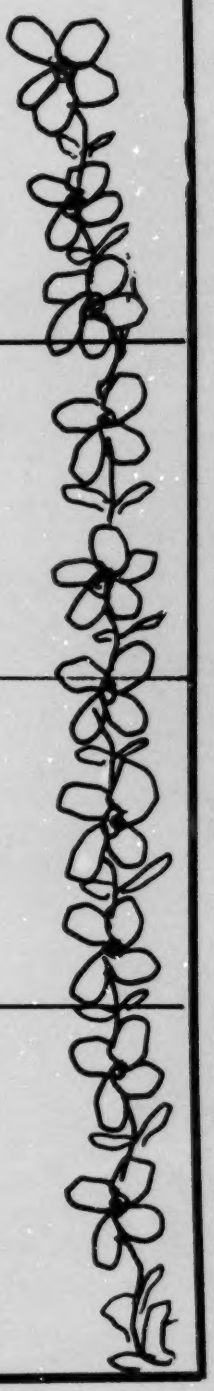
4) $3 \div 1\frac{4}{5}$

5) $10 \div 1\frac{1}{4}$

6) $9 \div 5\frac{1}{4}$

7) $60 \div 2\frac{1}{2}$

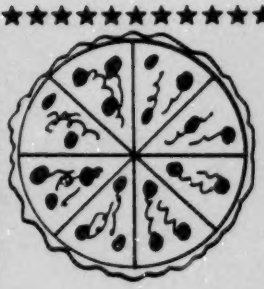
8) $90 \div 3\frac{1}{3}$



P.O. 5.06.08.02

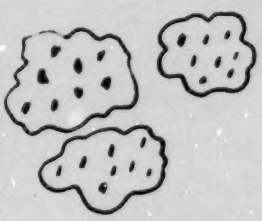
NAME: _____ CLASS: _____ DATE: _____

Solve each word problem.

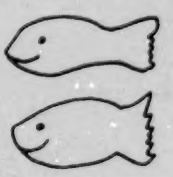


1) There are 32 students in Mr. Reynolds class. If $\frac{3}{4}$ of the students like pizza, how many students do not like pizza?
Show all work

3) Susan has 4 pies for her party. If she uses $\frac{1}{5}$ of a pie for each girl at the party party, how many girls can she serve from the 4 pies?
Show all work



2) If Betty uses 2 cups of flour for each dozen cookies, how many cups will she use for $6\frac{1}{2}$ dozen cookies?
Show all work

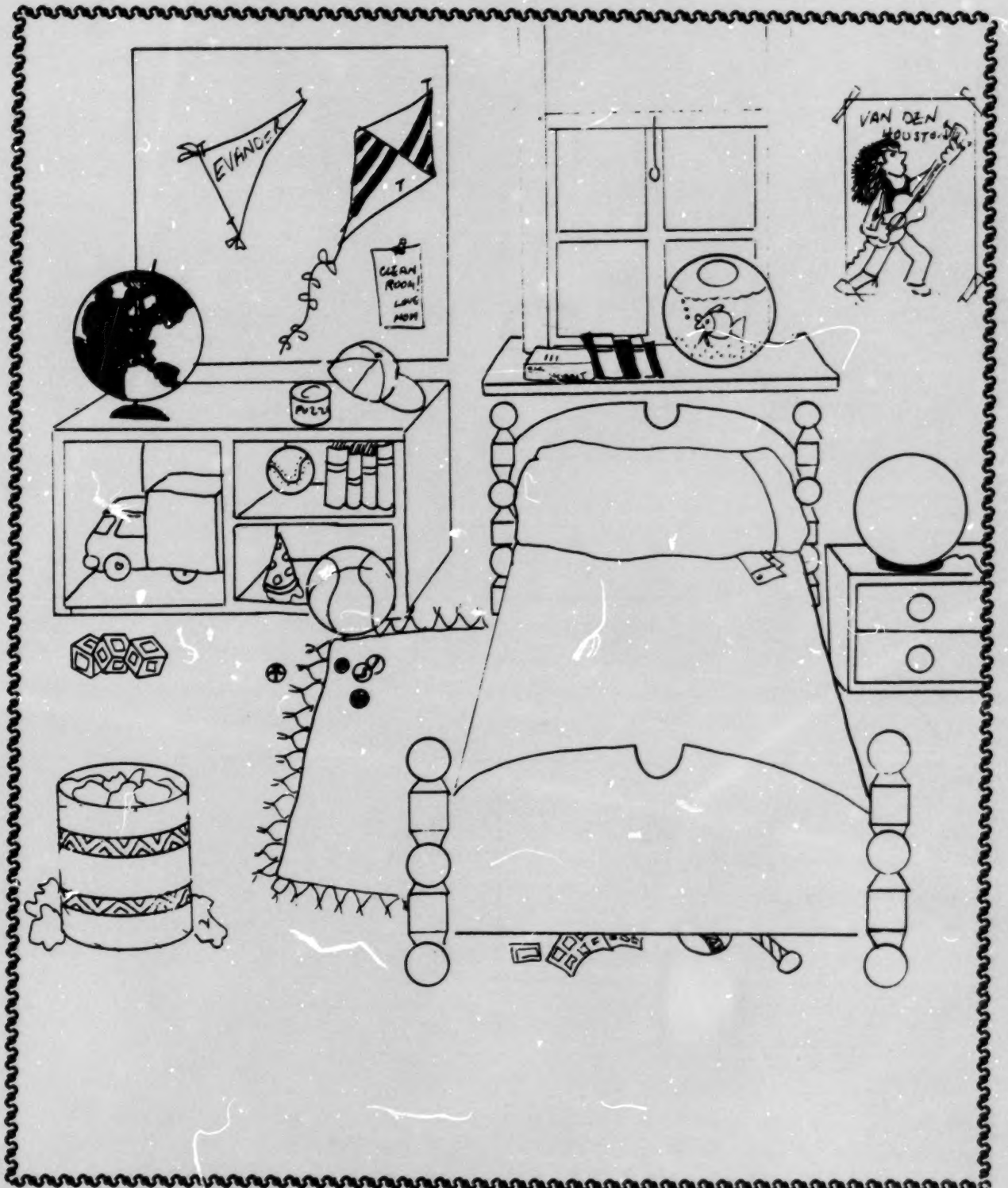


4) While on vacation Joe caught 5 fish of equal weight. The total weight of the fish was $7\frac{3}{4}$ pounds. How much did each fish weigh?
Show all work

P.O. 5.09.06.01

NAME: _____ CLASS: _____ DATE: _____

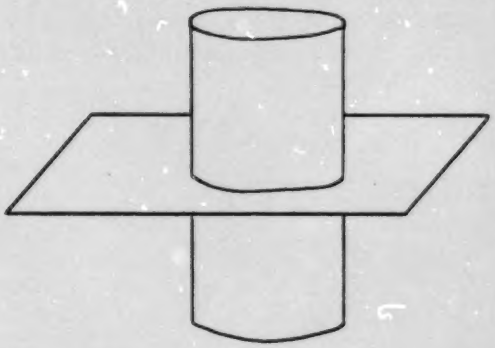
Color the spheres.

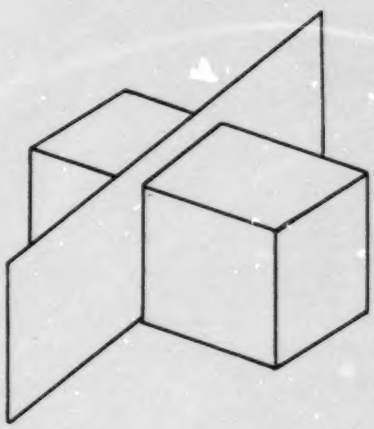


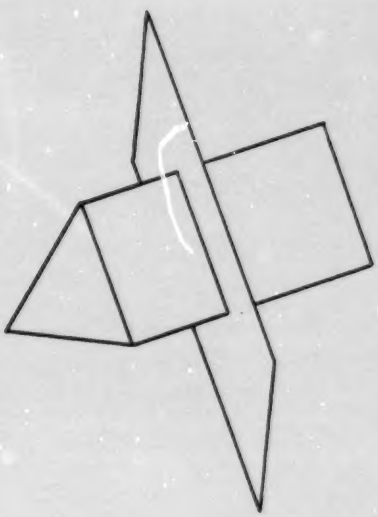
P.O. 5.09.06.02

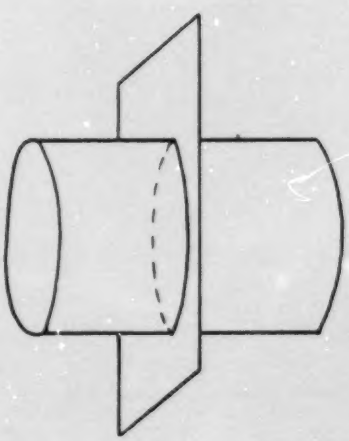
NAME:_____ CLASS:_____ DATE:_____

Place a check next to each intersection which creates two hemispheres.









P.O. 5.09.07.01

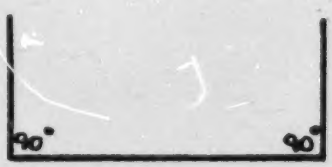
NAME:_____CLASS:_____DATE:_____

Use a ruler and a protractor to construct the following figures.

1. In the space below, construct a square whose sides are each 3 inches.

2. Construct a triangle that has three $60^{\circ}$ angles.

3. Complete this figure of a pentagon. Two sides are missing. When the pentagon is complete, measure the other three angles.



P.O. 5.09.07.02

NAME:_____ CLASS:_____ DATE:_____

Use a ruler and protractor to construct the following figures.

1. Construct a rhombus in the space below. Use the protractor to make it have 2 opposite angles of $60^{\circ}$ and 2 opposite angles of $120^{\circ}$. Remember the sides must all be of equal length.

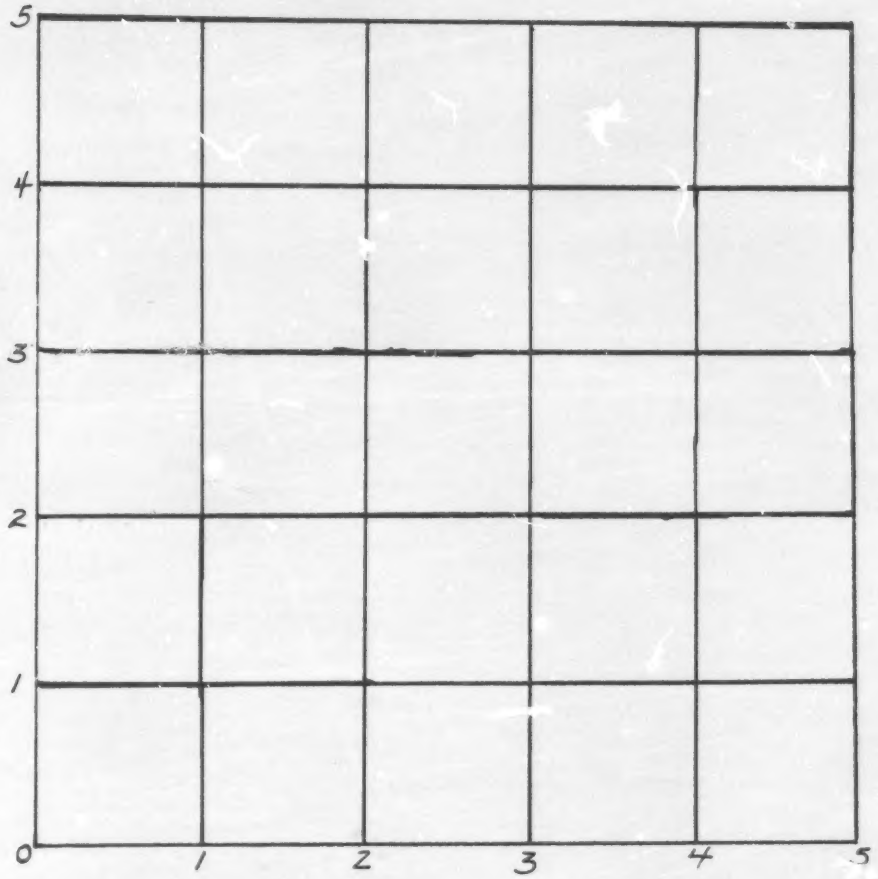
2. Construct a parallelogram with four $90^{\circ}$ angles.

3. Construct a trapezoid whose base segment is 5 inches long and whose top segment is 3 inches long. Complete the figure and measure the other sides and all the angles.

P.O. 5.12.05.01

NAME: _____ CLASS: _____ DATE: _____

Draw the object at the indicated coordinate.



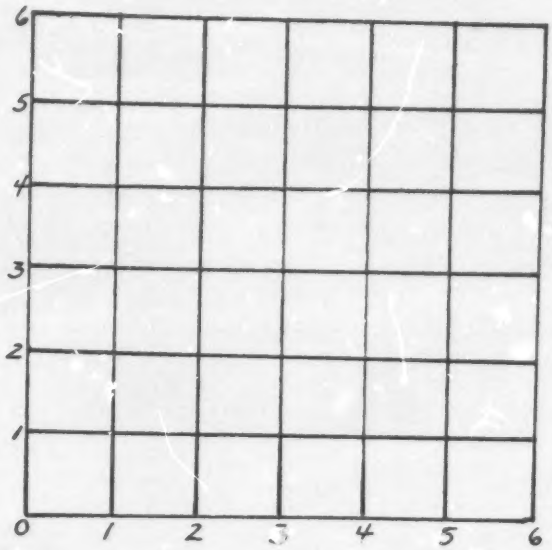

| Object | Coordinates |
|---|---|
| House | (2, 3) |
| Car | (4, 4) |
| Face | (1, 1) |
| Ball | (4, 2) |
| Kite | (5, 3) |

P.O. 5.12 05.02

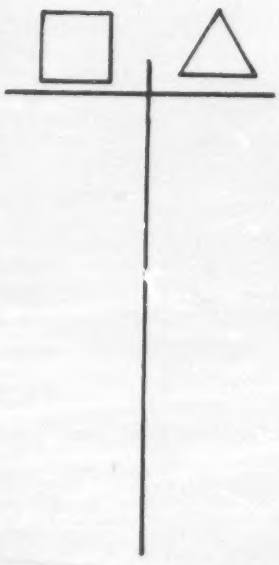
NAME:_____ CLASS:_____ DATE:_____

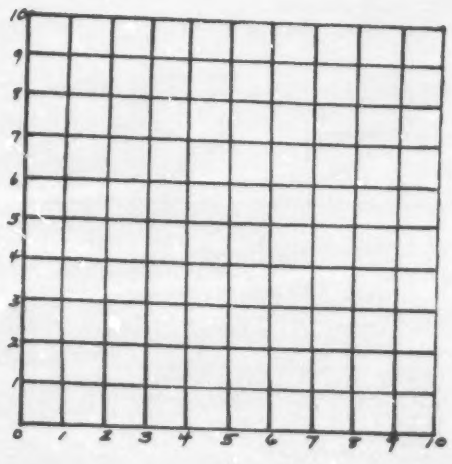
Solve the equations. Fill in the variables and plot the coordinates.

□ + △ = 6




□ + △ = 10

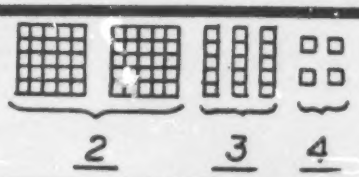




P.O. 5.01.07.02

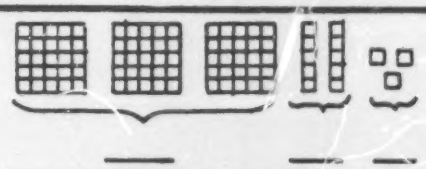
NAME: _____ CLASS: _____ DATE: _____

First: Write the base five numeral to represent each group of blocks.
Second: Write the base five numeral in exponential form.
Third: Compute the base ten numeral.

A) 

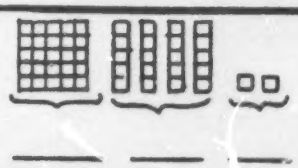

$\underline{234}_{five} = (2\times5^2)+(3\times5^1)+(4\times5^0) =$

$50 + 15 + 4 = \underline{64}_{ten}$

B) 

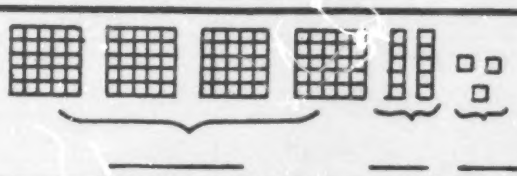
$____{five} = (__\times5^2)+(__\times5^1)+(__\times5^0) =$

$__ + __ + __ = ____{ten}$

C) 

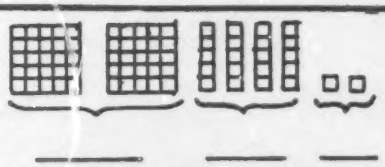
$____{five} = (__\times5^2)+(__\times5^1)+(__\times5^0) =$

$__ + __ + __ = ____{ten}$

D) 

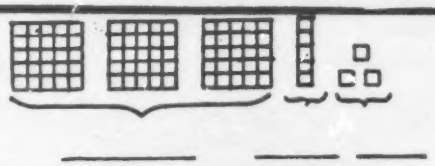
$____{five} = (__\times5^2)+(__\times5^1)+(__\times5^0) =$

$__ + __ + __ = ____{ten}$

E) 

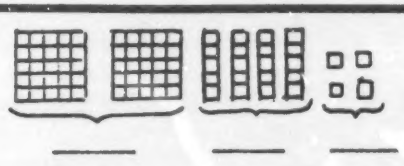
$____{five} = (__\times5^2)+(__\times5^1)+(__\times5^0) =$

$__ + __ + __ = ____{ten}$

F) 

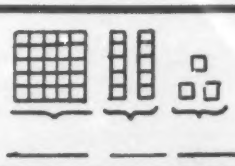
$____{five} = (__\times5^2)+(__\times5^1)+(__\times5^0) =$

$__ + __ + __ = ____{ten}$

G) 

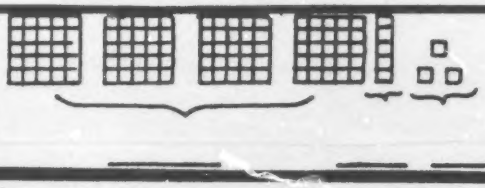
$____{five} = (__\times5^2)+(__\times5^1)+(__\times5^0) =$

$__ + __ + __ = ____{ten}$

H) 

$____{five} = (__\times5^2)+(__\times5^1)+(__\times5^0) =$

$__ + __ + __ = ____{ten}$

I) 

$____{five} = (__\times5^2)+(__\times5^1)+(__\times5^0) =$

$__ + __ + __ = ____{ten}$

P.O. 5.01.07.03

NAME:_____ CLASS:_____ DATE:_____

Fill in the blanks A through J then complete the place value chart.

| Numeral | = | One hundred-twenty five<br>$5^{-(a)}$<br>125 | Twenty-five<br>$5^{-(b)}$<br>$____^{(c)}$ | Five<br>$5^{1}$<br>$____^{(d)}$ | Ones<br>$5^{0}$<br>1 |
|---|---|---|---|---|---|
| $324_{five}$ | = | $(1 \times 5^{3})$<br>$(1 \times __^{(e)})$ | $(3 \times 5^{2})$<br>$(3 \times 25)$ | $(2 \times 5^{(f)})$<br>$(2 \times 5)$ | $(4 \times 5^{0})$<br>$(4 \times __^{(g)})$ |
| $213_{five}$ | = | $(__^{(h)} \times 5^{3})$<br>$(0 \times 5)$ | $(2 \times 5^{2})$<br>$(2 \times __^{(i)})$ | $(1 \times 5^{1})$<br>$(1 \times 5)$ | $(3 \times 5^{-(j)})$<br>$(3 \times 1)$ |
| $43_{five}$ | = | | | | |
| $2132_{five}$ | = | | | | |
| $3_{five}$ | = | | | | |
| $1234_{five}$ | = | | | | |
| $312_{five}$ | = | | | | |

P.O. 5.01.07.04

NAME: _____ CLASS: _____ DATE: _____

Rewrite each base five numeral in expanded notation and then match it to its base ten equivalent.

| | | Base Ten Equivalent |
|---|---|---|
| A. $312_{five}$ | $(3 \times 5^2) + (1 \times 5^1) + (2 \times 5^0)$<br>$(3 \times 25) + (1 \times 5) + (2 \times 1)$<br>$75 + 5 + 2$ | |
| B. $1432_{five}$ | | ____ $58_{ten}$ |
| C. $24_{five}$ | | ____ $242_{ten}$ |
| D. $213_{five}$ | | A $82_{ten}$ |
| E. $2102_{five}$ | | ____ $41_{ten}$ |
| F. $131_{five}$ | | ____ $14_{ten}$ |
| | | ____ $277_{ten}$ |

198

P.O. 5.01.08.01

NAME: _____ CLASS: _____ DATE: _____

FOR EACH BASE TWELVE NUMERAL, FIND ITS EQUIVALENT IN BASE TEN.

$11_{twelve}$ = _____

$21_{twelve}$ = _____

$10_{twelve}$ = _____

$24_{twelve}$ = _____

$13_{twelve}$ = _____

$29_{twelve}$ = _____

$16_{twelve}$ = _____

$24_{twelve}$ = _____

$19_{twelve}$ = _____

$40_{twelve}$ = _____

$22_{twelve}$ = _____

$32_{twelve}$ = _____

$20_{twelve}$ = _____

$30_{twelve}$ = _____

$14_{twelve}$ = _____

$23_{twelve}$ = _____

$42_{twelve}$ = _____

$12_{twelve}$ = _____

$50_{twelve}$ = _____

$33_{twelve}$ = _____

P.O. 5.01.08.02

NAME:_____ CLASS:_____ DATE:_____

FILL IN THE BLANKS IN EACH SERIES OF NUMBERS IN BASE TWELVE.

a). $0_{twelve}$ $1_{twelve}$ $2_{twelve}$ $3_{twelve}$ _____

b). $7_{twelve}$ $8_{twelve}$ $9_{twelve}$ $T_{twelve}$ _____

c). $9_{twelve}$ _____ $E_{twelve}$ $10_{twelve}$ $11_{twelve}$

d). $10_{twelve}$ $11_{twelve}$ _____ $13_{twelve}$ _____

e). $18_{twelve}$ $19_{twelve}$ _____ $1E_{twelve}$ _____

f). $25_{twelve}$ $26_{twelve}$ $27_{twelve}$ _____ _____

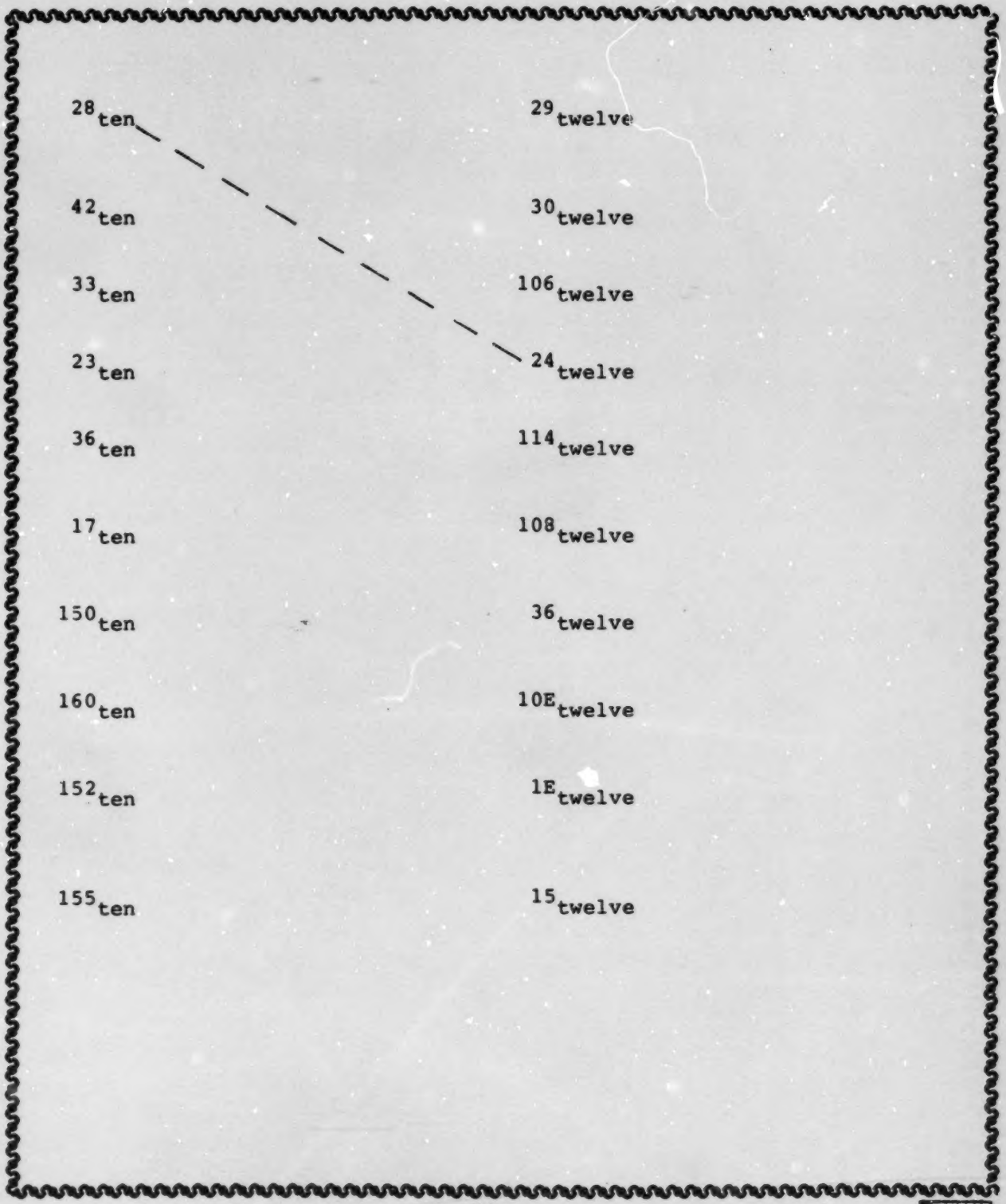
RENAME EACH BASE TWELVE NUMERAL AS A BASE TEN NUMERAL.

| Base Twelve Number | Base Ten Number | Base Twelve Number | Base Ten Number |
|---|---|---|---|
| a). $13_{twelve}$ = | _____ | f). $41_{twelve}$ = | _____ |
| b). $20_{twelve}$ = | _____ | g). $30_{twelve}$ = | _____ |
| c). $1E_{twelve}$ = | _____ | h). $2E_{twelve}$ = | _____ |
| d). $2T_{twelve}$ = | _____ | i). $T_{twelve}$ = | _____ |
| e). $1T_{twelve}$ = | _____ | j). $11_{twelve}$ = | _____ |

P.O. 5.01.08.03

NAME: _____ CLASS: _____ DATE: _____

DRAW A LINE TO CONNECT EACH BASE TEN NUMERAL WITH ITS BASE TWELVE EQUIVALENT.



P.O. 5.10.09.01

NAME: _____ CLASS: _____ DATE: _____

Remember Rate times Time = Distance (It is the same as Time times Rate = Distance). Fill in the box.

# *RATE times TIME equals DISTANCE*

① $3 \times 5 = \square$

② $2 \times \square = 8$

③ $6 \times 4 = \square$

④ $7 \times \square = 14$

⑤ $\square \times 3 = 12$

⑥ $4 \times 5 = \square$

⑦ $\square \times 9 = 900$

⑧ $60 \times 30 = \square$

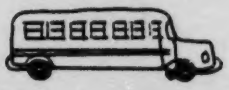
P.O. 5.10.09.02

NAME:_____ CLASS:_____ DATE:_____

Look at the pictures. Solve the problems based on the information supplied.

How many miles? _____

40 miles per hour



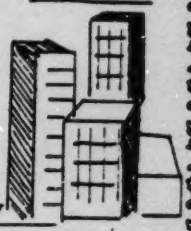
home

2 hours

School

How many miles? _____

50 miles per hour



New York City

4 hours

Boston

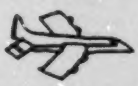
How many miles? _____

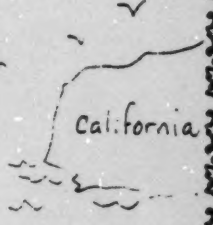
7 miles per hour

3 hours

How many hours? _____

600 miles per hour






3000 miles